BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, MAY 30th, 1936

BIRTH CONTROL

CONTRACEPTION AND THE SO-CALLED SAFE PERIOD*

BY

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The steady decline in the birth rate of most Western communities during the past sixty years is generally ascribed in the main to the operation of intentional restriction of fertility. A falling marriage rate and an increasing age at marriage have both contributed to some extent, but statistical inquiry shows that these play a relatively insignificant part, and that the chief cause is to be found in the diminishing fertility among married women at all ages within the reproductive period. The influences thus combining to reduce the birth rate are usually attributed to a common cause—namely, the rising standard of living and the sociological forces which this calls into being.

There are three ways by which intentional family restriction can be attained: abstinence, abortion, and birth control, including contraception. Of the extent of the part played by abstinence it is impossible to speak definitely. Where there exist social and economic influences making for increasing restriction it is clear that this method must have a rising importance, but we may probably safely conclude that it can never play more than a relatively minor part. As having some bearing on this aspect of the question it is of interest to note that Raymond Pearl,[1] in his study of nearly 1,000 couples who admitted intentional attempts at limitation, found that only 2.2 per cent. adopted abstinence apart from the so-called "safe period," and there were none who admitted complete abstinence.

Intentional or Unlawful Abortion

While there is general agreement concerning the frequency of unlawful termination of pregnancy during the early months, the secrecy surrounding the practice makes the gathering of reliable statistics extremely difficult. Before we can attribute to abortion any part in the lowering of the birth rate we require evidence of a steady increase in the illicit practice over recent years. As gauged from the mortality rates the available data for England and Wales are so conflicting that it is impossible to arrive at any definite conclusions. On the one hand, there are the figures of the Registrar-General, which exhibit no appreciable trend since the year 1926, when the abortion death rate was for the first time made available for separate study in the general figures. On the other hand, there are the figures of the Ministry of Health, which are based upon the reports on individual maternal deaths received from medical officers of health. These show a steady rise in the percentage of the total puerperal death rate due to abortion from 10.5 in 1929 to 16 in 1933. It would seem to be significant that of the factors responsible for maternal mortality abortion is the only one which exhibits this steady upward trend in the Ministry of Health reports.

The discrepancy in the evidence derived from these two separate sources is so great as to render impossible any conclusive statement regarding the part which unlawful abortion plays in the reduction of the birth rate. But on general grounds it is plausible to assume that the increasing urge to family restriction, which constitutes such a strong characteristic of modern social life, should express itself in a more frequent recourse to the practice of intentional interference with the unwanted pregnancy. There is no doubt that on the Continent—for example, in Germany—abortion has increased to an enormous extent, and that it has to be reckoned among the major influences making for the diminishing birth rates of the affected countries.

While we seem to be justified in assuming that the practice is less extensive in our own country there is, at the same time, both in the maternal mortality rates and in the experience of doctors generally, clear evidence of its widespread prevalence. It is notorious that the death rate from abortion is restricted almost entirely to the criminal type, and that the main causal factor of the fatalities is sepsis. Parish,[2] in a recent analysis of 1,000 successive cases of abortion, found a mortality of 3.7 per cent. in 374 following instrumental interference, as contrasted with a mortality of *nil* in 246 of the "spontaneous" type. This study was based upon hospital, and therefore selected, cases, and the differential mortality rates therein stated cannot be transferred to criminal and spontaneous cases in the country generally. They serve, however, to demonstrate in a striking manner the dominating part played by unlawful interference in the general death rate from abortion.

In this connexion we have alluded to the Ministry of Health returns, which exhibit a 52 per cent. rise in the death rate from this cause within a comparatively few years. If we accept the commonly agreed rate of abortion as 1 in 5 or 6 pregnancies the total annual number of abortions in England and Wales is in the neighbourhood of 100,000. If we admit the claim, which is often made, that the majority of abortions are the result of unlawful practices, we can readily realize how materially any appreciable percentage increase in their number would contribute towards an explanation of the reduction in the birth rate. These views are, in the present state of our knowledge, necessarily largely speculative. They indicate, however, that before we can estimate the part which contraception plays in intentional family limitation we cannot afford to disregard the potential influence of this much more sinister agency.

* British Medical Association Lecture delivered at Aberdeen on February 20th.

Birth Control

I do not propose on this occasion to discuss the position of the doctor in relation to the principles underlying birth control. This I[3] have attempted to do on a previous occasion, and I may be permitted to quote one paragraph from that article which conveys within brief compass my general views on this subject.

"To a profession the measure of whose service is determined largely by the degree in which it maintains its sense of realism it is imperative that this question should be faced freely and frankly. It is a matter of common knowledge that birth control is employed by all classes in an increasing degree; it has come to be assumed by the people as their inalienable right to add to their families by choice and not by chance when the circumstances so demand it; the sanction of the 'Churches' is there to bless it in varying measure, and the profession of medicine itself has adopted it as an important element of its economic creed. It is true that no one of these circumstances is of itself a justification of the principles of birth control; nevertheless, by emphasizing the extent to which the practice has become corporate in the life of the people they demonstrate that the time has come for the profession to reflect carefully whether in its duty to the individual and its larger duty to the State it dare refuse to take an active part in guiding a movement which, in its extent and the rapidity of its growth, is exerting, and is destined in increasing measure to exert, a profound influence on the nation's health."

Whatever attitude as individuals we adopt towards the religious and ethical or the social and economic implications of the movement, we cannot, I believe, evade those aspects of the problem which have a bearing on personal and public health. There is, I know, wide difference of view in the ranks of the profession on these matters. At one extreme there are those who, on medical grounds, regard with disfavour all artificial measures directed to the limitation of fertility, and who maintain that the attitude of the profession should be one of unqualified opposition. At the other extreme there are those who consider that in birth control we possess a means which is capable of elevating social health and increasing racial vigour. Between these two there is a considerable group of medical men who regard the practice of birth control as a matter of individual predilection as much beyond the concern of the doctor as the mode of expenditure of the family income.

There is ample evidence that the community in general has accepted birth control as an essential and legitimate element of its economic creed, and that it is demanding, and regards itself as entitled to receive, from medical men guidance and help on matters on which the profession alone can be expected to pronounce with authority. It may justly be urged that a demand carrying such sanction and such impulsion must in the end dictate the policy of the profession in its capacity as the servant of the public. In the meantime it is becoming increasingly recognized that contraception is a valuable addition to the instruments of preventive medicine. In 1930 the Ministry of Health empowered local authorities to make provision for contraceptive information being given to married women suffering from conditions in which the strain of pregnancy or childbirth is apt to endanger health or life. This State acceptance of the part that birth control is capable of playing in the sphere of public health is a powerful commentary on the strength which the movement has achieved for itself in modern times.

In this place I shall address myself to those who have accepted birth control as a procedure which comes within the purview of medical practice, and I shall attempt to outline the present state of our knowledge on some of the more important technical aspects of the question.

The Safe Period

Fresh public and medical interest has been evoked within recent years by the method of preventing conception which is based upon the so-called sterile period of the menstrual cycle. Many persons, both lay and medical, have long believed in the existence of a "safe period." But in the absence of certain knowledge regarding such essential matters as the phase of the cycle in which ovulation normally occurs and the survival period of ova and sperm cells, these beliefs have hitherto had little sanction in science. Within recent years, however, much new information has been obtained, and we are now able to bring the views on this subject to the test of experience and experiment.

The most potent argument directed in the past against the existence of a safe period has been the belief that, even if ovulation is regarded as a phenomenon of regular periodicity, the time during which ova and spermatozoa are capable of survival in the genital canal is so considerable as to vitiate any attempt to define the fertile period. This uncertainty has applied more especially to the fate of the sperm cells; some writers have claimed that these can remain fertile in the upper genital tract for several weeks. Recent research, however, indicates that whilst infertile spermatozoa may retain their morphological characters in the tubes unchanged for a considerable period, thus giving a false appearance of survival, their actual fertility does not extend beyond at the most forty-eight hours after ejaculation. The work of Crew[4] and others has demonstrated that in mammals with scrotal testicles the difference between the temperatures of the testis and the female genital tract is a factor of some importance in restricting the survival of the male cells. In so far as the ovum is concerned, there would now seem to be incontrovertible evidence that if unfertilized it undergoes degeneration within a relatively few hours after dehiscence.

TIMING OF OVULATION

A further important addition to our recent knowledge relates to the timing of ovulation. Since the pioneer investigations of Ludwig Fraenkel, who first showed from ovaries studied at operation that ovulation precedes menstruation, evidence of a conclusive kind has narrowed the date of ovulation in women and the higher apes to a more or less defined phase in the centre of the cycle. Wilfred Shaw describes ovulation, in a 4-weekly cycle, as occurring on the 14th day, Schroeder the 14th to the 16th day, Ruge the 8th to the 14th day, and Halban and Köhler the 8th to the 18th day.

These writers describe the timing of ovulation in terms of the interval in days from the first day of the preceding menstruation. Ogino[5] was the first to suggest that ovulation is best described in reference to the next menstruation, with which it is more physiologically related. His studies lead him to postulate ovulation as occurring between the 12th and the 16th day before the next period. Most of these investigations have been based upon the appearances found in the ovaries at differing stages of the cycle. Allen, Pratt, Newell, and Bland[6] have added a more precise chapter to this study by hunting for ova in the material removed by irrigation of the tubes at forty abdominal sections. In twenty-six such cases studied between the 12th and 16th days after the onset of menstruation they found five ova; one at the 14th day, three at the 15th, and one at the 16th. No ova were obtained outside these limits.

These investigations on human material have been confirmed by studies carried out in the higher apes. Thus Hartman[7] reported fifty-five cases of pregnancy in

Macacus rhesus, in each of which conception resulted from an isolated and recorded coitus. On the average, conception was found to be on the 13th day, in the majority of cases between the 12th and 15th. With the exception of one fertile coitus on the 19th, fertilization did not take place outside the 10th to 17th days. Hartman[8] has obtained confirmatory evidence by rectal palpation of the monkey ovary and noting the day of collapse of the ripe follicle, an observation which can be made with precision in these animals. In 106 cases it was thus determined that ovulation was restricted to the interval between the 9th and the 18th day, except in one instance, when it occurred on the 20th day. In all except four cases ovulation took place between the 9th and 16th days. As Hartman says, it is thus obvious that the monkey has a sterile and a fertile period. A further point of some possible significance in its bearing on the human problem is that in individual animals there was evidence that ovulation was repeated on approximately the same day of the cycle.

UTERINE MUSCLE BEHAVIOUR AND OVULATION

Knaus[9] claims, by a method devised for testing the variations in the reactivity of the uterine muscle to posterior pituitary extract at different stages in the cycle, to have determined with accuracy the time of ovulation in women. This method relies on the observation, made with a small bag introduced into the uterus and connected outside with a manometer and recording needle, that within twenty-four hours after ovulation, when the uterus comes under the influence of the corpus luteum, the spontaneous contractions cease, and the uterine wall becomes flaccid and sluggish or completely insensitive to the action of posterior pituitary. This state persists in an infertile cycle till the day before menstruation, when there is a recovery of the ordinary spontaneous and rhythmic contractions and of the response to pituitary which characterize the uterus during the pre-ovulationary period of the cycle.

By carrying out day-to-day records of these uterine changes during the menstrual cycle Knaus claims to have shown that in women with a normal reproductive physiology and a 28-day cycle ovulation always occurs on the 14th day. In a 26-day cycle it occurs on the 12th day, and in a 30-day cycle on the 16th day. In other words, the length of the cycle determines the day of ovulation, which is so timed as to leave the post-ovulation or luteal period constant at fourteen days. In this way Knaus was led to the conclusion, previously arrived at by Ogino, that ovulation is to be estimated backwards from the next menstruation. Whilst Ogino's observations allow of an interval varying from twelve to sixteen days, Knaus postulates a constant 14-day period. Allowing one day for ovulation and two days for the maximum survival period of the sperm cells, Knaus thus describes the fertile period of the cycle of sexually normal women as lasting for three days. As there are occasions even in health when ovulation may be one day early or one day late he advises that in practice the fertile period be regarded as consisting of five days: 3 days before + day of ovulation + 1 day after.

Before any reliance can be placed upon the method it is essential that the woman should, by careful observation over a year, have determined her own type and the extent of any variation in it. Thus, if there is no variation from the 28-day cycle ovulation occurs regularly on the 14th day precisely. If the cycle varies between 28 and 30 days the estimate must make allowance for ovulation between the 14th and the 16th days inclusive, and so on. As the normal rhythm may be affected by childbirth or miscarriage it is desirable that a new estimate over four successive periods should be made after such an event to determine whether a revision of the plan is necessary. A similar distortion of the normal rhythm may happen after febrile and debilitating diseases, severe physical or psychic trauma, or any drastic alteration in the ordinary routine of living, such as prolonged travel in strange climates, etc. Knaus claims to have confirmed these findings by a study of the cycles of fifty women, and he and others have published evidence from the marital history of large numbers of couples to prove the reliability of the sterile period which he lays down.

CRITICISM OF THE OGINO-KNAUS METHOD

There would thus seem to be strong evidence, from both biological and clinical sources, for the existence in women of a safe period at each end of the menstrual cycle, and for a fertile phase that is restricted to its central stage. The more this evidence is sought for along lines of scientific precision the more it tends to dispose of the opinion which has hitherto dominated our outlook on these questions, that in women ovulation and therefore conception may occur at any stage of the cycle. It has been frequently urged that because sex relationships are tolerated at any stage of the cycle in women there is not the same physiological necessity for cyclic ovulation as exists in those lower animals in which coitus is restricted to the phase corresponding with ovulation. At first sight this argument seems plausible. We have, however, to place against it the now well-established fact that the latter phase of the cycle is in woman related quite as definitely to the appearance and growth of the corpus luteum as it is in the lower animals, and that this, in itself, necessarily connotes a cycle for ovulation so timed as to allow this luteal rhythm. This is further to be correlated with the biological observation that an active corpus luteum is necessary for the embedding and early development of the fertilized ovum.

At the same time the experimental basis of Knaus's contention has met with much criticism. The investigations of Hartman in apes, whose general sex physiology closely resembles the human in those respects which have been subjected to scientific comparison, are strongly opposed to Knaus's views in that they reveal a wide variability in the day of ovulation (from the 9th to the 20th day after the onset of menstruation) which is independent of total cycle length. Further, some workers have questioned the validity of the experimental work by which Knaus claims to have determined with precision the timing of human ovulation. Thus Chassar Moir,[10] working in the obstetrical and gynaecological department of the British Post-Graduate Medical School, has shown that the individual variations in behaviour of the uterine muscle at different stages of the menstrual cycle, both in regard to its spontaneous contractions and in its response to posterior pituitary, are so great that any method based upon observations of this kind cannot be used as an exact test for the time of ovulation.

Against this criticism of detail the supporters of the method based upon a fertile period estimated backwards from the expected menstruation—the Ogino-Knaus, or the OK method as it has been somewhat quaintly termed—have advanced much general evidence of a confirmatory nature. Recently Latz[11] has recorded the results of a study of 114 couples who, employing the safe period, had 4,702 sterile intercourses over a total period of 1,128 cycles. In his method Latz advises the addition of one prohibited day before, and two prohibited days after, the five days postulated by Knaus. It may be legitimate to surmise that by thus shortening the "safe period" at each end Latz is still further restricting the risk of conception occurring from an ovulation outside the period

stipulated by Knaus. At the same time, even this curtailment of the "safe" period does not dispose of the risk of conception when intercourse coincides with the extremes of the wide ovulationary interval which our comparative studies lead us to associate with the human cycle.

It is thus difficult to reconcile the clinical with the biological data. It is conceivable that the discrepancy may be explained by the fact that ova dehisced at the limits of the ovulationary period are rendered sterile because of their escape at a time unsuitable for their subsequent growth. It may be the case, for example, that an ovum escaping at the 20th day of a 28-day cycle is thwarted because sufficient time is not allowed for full development of the corpus luteum and of the changes which this induces in the uterus before embedding can take place. Conversely, an ovum dehisced at, say, the 8th day may, even if it is fertilized, be unable to survive over the fourteen days or thereabouts which must elapse before the endometrium is ready for embedding.

From the practical standpoint we may briefly summarize by stating that there now exists evidence to suggest that if certain criteria are rigidly observed in each individual case birth control based on the safe period can be employed with a reasonable measure of certainty. The conditions which require to be fulfilled in each case are:

1. The menstrual cycle to be observed over a minimum period of eight months (Latz). Any variability in type beyond a maximum of ten days renders the scheme unavailable. Knaus has prepared a small menstruation calendar for this purpose which can be obtained in this country from H. K. Lewis & Co. Ltd., 136, Gower Street, London, W.C.1.

2. The fertile period extends from the 19th to the 12th day before the first day of the next period where the cycle is constant from month to month (Latz).

3. Where any variation in type exists the difference in days between the minimum and maximum cycles occurring during the eight months observed is added to the beginning of the fertile period as based upon the maximum cycle.

4. Adjustments may be required after childbirth or abortion, after physical or psychic shocks, after febrile and debilitating diseases, and after any drastic alteration in the routine ways of life.

Contraceptive Measures

It has been computed that at least 80 per cent. of all women menstruate regularly enough to be able to make use of the above methods. There are many, however, for whom they are not available. The establishment of the menstrual criteria before the scheme becomes operative demands a longer period of delay than is often possible for the woman who desires immediate protection either for social or economic reasons, or for the doctor who is prescribing infertility in the medical interests of his patient. Furthermore, the continued care and trouble are such as we can hardly expect to find in the average type of woman who solicits advice at the birth control centre. For these reasons birth control based upon the Ogino-Knaus principle must in general be regarded as a luxury for those who are socially more favoured.

For a large proportion of those who desire adequate protection, or for whom protection is medically prescribed, the employment of contraception is generally the only alternative available. The recognition of this widespread need is expressed in the rapid increase, during the past few years, in the number of clinics for the dissemination of advice, in the increasing literature, both lay and medical, which is devoted to the subject, and in the multitude and the variety of the commercial contrivances with which the market is deluged. There is ground for the belief, however, that many of the methods and materials that are in extensive use are not only ineffective but may be a source of danger to the public health. It is well established that some of the drugs employed are irritating and, in the opinion of many gynaecologists, capable of producing serious and lasting disease in the female genital tract. There is ample justification for the view that, apart from the question of the adequacy of the different contraceptives in common use, there is urgent reason on hygienic grounds for the whole subject being brought under the scrutiny and supervision of the responsible medical authorities. The Bill recently introduced into the House of Lords by Lord Dawson had this as its main objective.

Within recent years articles have from time to time appeared in the medical journals on this aspect of the subject, and the Birth Control Investigation Committee in this country and the National Committee on Maternal Health in New York have subsidized, and published the results of, extensive researches into the chemistry and physics of contraceptives. These serve to show that much fundamental work is needed before we can claim to possess the knowledge required for the establishment of contraception on lines which are capable of being applied with certainty by the participants, and of being recommended with confidence by the medical profession.

The dangers associated with contraceptives apply more especially to those whose action is based upon the introduction of drugs into the vagina, usually in the form of suppositories or douches. Materials of this class are employed extensively because they possess the great advantage of simplicity. So far as I know there has been no adequate study of their relative effectiveness, though the opinion generally held is that, in their nature and the uncertainty associated with their mode of introduction, they are less reliable than purely mechanical contraceptives.

Among the mechanical methods the chief are the check pessary used by the woman and the sheath used by the man. These constitute the procedures most commonly employed at birth control clinics, and, in regard to their value, we now possess a considerable body of evidence which has been gathered by various clinics. The check pessaries in most common use are based upon the Mensinga, or Dutch pattern, which acts by occlusion of the vagina, and the French or cervical cap pattern, which is fitted over the cervix. In general, it may be stated that the vaginal pessary is the more easy to fit and the less likely to be disengaged by intercourse; for these reasons it is the more favoured. These pessaries must be fitted under medical supervision, and their success depends upon the care and intelligence which the woman is able and willing to devote to their continued use. To increase their efficiency a lubricant ointment and the douche are often simultaneously recommended. The sheath for the man is not generally so acceptable in the practice of the clinic as the pessary for the woman. The man is not so amenable, on the average, to the regime demanded, and the expense entailed is often prohibitive. Further, there is the considerable risk associated with defects in the rubber due to imperfections in the manufacture or to drying through age.

While these methods are capable of conferring a high measure of success (from 90 to 95 per cent.)[12] when properly and consistently used, in practice there are many circumstances which render their actual effectiveness partial and often poor. The chief reasons for failure are found in the fact that the method becomes irksome and even unacceptable, and the women tend to discontinue their attendance at the clinic. It has been estimated

that from 40 to 80 per cent. fail to take advantage of the supervisory control thus offered to them.

It is apparent that, despite the many and various procedures in use, we are still far from possessing the ideal contraceptive. By reason of the purpose it is intended to subserve and the varying conditions that govern its use, a contraceptive should be cheap, safe, efficient, and simple in application. It is in the interest of the public that the procedure should be under the guidance of the medical profession, but we cannot expect that contraception will become generally available and acceptable until some method is discovered that is freed from the restraints implied in the need for constant medical supervision that are inherent in the best of our existing practices.

Sterilization

In conclusion, some mention must be made of the limitations that surround the use of contraception in preventive medicine. I have referred on a previous page to birth control as prescribed for women who suffer from disease of the kidneys, heart, lungs, etc., and whose health is liable to be endangered by child-bearing or child-birth. In some such cases contraception is of value when it is carried out with strict attention to the necessary safeguards. At the same time, where the medical state is so grave as to demand complete protection against the risks incidental to child-bearing, contraception may not be capable of providing the absolute assurance that is required. As has been previously noted, even with constant medical supervision contraception is attended with a risk of failure that varies from 5 to 10 per cent. In such cases the security required by the urgency of the medical indications is only to be obtained by sterilization or by the application to the ovaries of sterilizing doses of *x* rays.

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TREATMENT OF MYASTHENIA GRAVIS

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The treatment of myasthenia gravis was for a long time on an unsatisfactory empirical basis. The reasons for this were twofold. In the first place the natural remissions of the disease were too readily ascribed to the results of beneficial therapy ; while, secondly, the nature of the pathological upset was unknown and variously considered to be of neural, muscular, or humoral origin. The first real advance arising out of empirical methods was made by Edgeworth,[1 2] who in 1930 reported on the effects of ephedrine. She was herself a sufferer from myasthenia gravis, and she noticed a steady improvement over three years. Glycine and ephedrine in combination were tried by Boothby[3] in 1934, and he concluded that with this treatment " most patients improved sufficiently to permit them to return to work."

The resemblance of the abnormal muscular fatigability in myasthenia gravis to curare poisoning had suggested the myoneural junction as the seat of the pathological process, and Walker[4] in 1934 drew attention to the effect of physostigmine salicylate, given by hypodermic injection, in remedying this fatigue. The toxic effect of physostigmine prohibited large dosage, but the use of prostigmin, a less toxic analogue of physostigmine, was attended by dramatic results. This work has been confirmed by Pritchard,[5] Laurent,[6] and others, and attention has been focused on the myoneural junction.

Dale and Feldberg[7] have shown that normal transmission of excitation from motor nerve endings to the voluntary muscle fibres is concerned with the liberation of acetylcholine. In myasthenia gravis there may be insufficient liberation, or increased destruction by choline esterase, or the threshold value may be altered by other factors, as Briscoe[8] suggests. Feldberg and Vartiainen,[9] working on the superior cervical ganglion of the cat, found that eserine (physostigmine) strongly sensitizes the ganglion cells to injections of acetylcholine, and that potassium ions had a similar but much smaller effect. Eserine was from sixteen to forty times more powerful than potassium in this respect. These considerations indicated the probable mode of action of physostigmine and prostigmin in myasthenia, and also led Laurent and Walther[10] to investigate the action of potassium chloride given by mouth. They found a demonstrable improvement with large doses of potassium chloride and a useful adjuvant action to prostigmin in small repeated doses.

The following cases of myasthenia gravis were investigated as to the effects of prostigmin, potassium chloride, and physostigmine on their condition.

Clinical Cases

CASE I

A married woman aged 32 was admitted to hospital on July 8th, 1935, complaining of difficulty in speaking and swallowing and that her eyes crossed. The family history was negative, and the previous history was uneventful, except for dysmenorrhoea. For many years she had suffered from attacks of trembling, which came on every few weeks and during which her " inside " and hands used to shake. These attacks were also accompanied by sweating, usually occurred when she was worried, and lasted some hours. Two years ago she noticed that the right eye " would become crossed," and she saw double on looking to the right. She obtained spectacles from an optician, and these seemed to help her until four to six months ago, when the left lid began to droop, and she had her glasses changed, but without any effect on either eye.

During the past few months she noticed an irritation in the throat, which made her cough. For about six weeks she had had difficulty in swallowing, and this had gradually increased. It was not accompanied by any pain, and the difficulty was associated with solids rather than with liquids. At times the food had regurgitated through her nose. Her voice had recently altered and had become quiet, and since she had had the difficulty in swallowing she noticed she was slightly deaf, more so on the left side. For some time the patient had found that she tired very readily, and was unable to carry a shopping bag or walk as far as formerly, and that, whilst eating, her " mouth became tired " and food regurgitated through her nose. After resting, however, the feeling of fatigue passed off, and she was able to resume what she had been doing for a short period before tiring began.

CLINICAL EXAMINATION

On admission the patient was thin, pale, and rather depressed. There was a well-marked left-sided ptosis,

and on the right side the upper lid was retracted. Coarse nystagmus to the right was found, and there appeared to be weakness of the right lateral rectus and left medial rectus. Diplopia was present on looking to the right. The pupils were slightly irregular and reacted sluggishly to light. Both sides of the face were rather weak and the palate moved sluggishly. Dysphagia was observed, and the speech was nasal and slurred. Sensation was not impaired. The thyroid was rather full. The heart, lungs, and alimentary system were normal. *X*-ray of the skull was negative, and *x*-ray of the chest for enlargement of the thymus showed a possible slight enlargement. The blood Wassermann and an examination of the cerebro-spinal fluid proved negative, and the impedance angle was normal. The deafness was found to be middle-ear in type and of long duration. After admission the variability of the symptoms was noticed. In the morning they were less marked; thus the ptosis, although present, was slight, while the voice was fairly strong; after conversing for a short time, however, it became nasal in type, and finally faded to a whisper, to recover again after a period of rest. The effects of effort were noticed on the ptosis and palate also.

CASE II

A married woman aged 33 was admitted to the Maudsley Hospital on June 25th, 1932, complaining of depression. In the family history one paternal uncle died in a mental hospital and the father and one brother died of phthisis. The patient had always been nervous and of an excitable disposition, and had had attacks of depression at her periods, which did not begin until she was 19 years old. The main points in the medical history were as follows. She had had an appendicular abscess and tuberculous glands in the neck in 1922, three mastoid operations, in 1923, 1927, and 1929 respectively, the last one being complicated by cervical adenitis, and in addition she had had frequent attacks of quinsy. For about two months before admission she had been losing weight, sweating, sleeping badly, and suffering from headaches and nervousness. She was admitted to a general hospital on January 15th, 1932, when she had tachycardia, tremor of the hands, bilateral exophthalmos, and profuse perspiration. The blood pressure was 168/100, and the basal metabolic rate was +50 per cent. On January 25th she complained of severe abdominal pain, which recurred frequently. This was thought to be due to an acute salpingitis which had spread to the peritoneum. On March 20th she developed signs of a chronic intestinal obstruction, but was considered unfit for operation. The condition was thought to be gonococcal or tuberculous, but smears from the cervix and the complement-fixation test for gonococci were negative, whilst the Mantoux reaction was only positive to dilutions of 1 in 1,000.

MYASTHENIC SYMPTOMS

When the patient wakened on the morning of January 31st, 1932, the right eyelid was drooping, and on February 3rd the ptosis was more marked, the mouth was slightly asymmetrical on talking, and there was difficulty in protruding the tongue. Electrical reactions in the left arm and leg were normal. On February 17th, in addition to the above signs, she complained of diplopia. *X*-ray of the chest showed no enlargement of the thymus gland. She showed little change until June 8th, when she became depressed, restless, and suicidal, and she was transferred to the Maudsley Hospital on June 25th.

On admission here she was restless, agitated, and depressed, but in addition showed many hysterical features. She was querulous, self-centred, and continually making impossible demands. Physically, in addition to the signs of hyperthyroidism already noted, she showed weakness of the right eyelid and face, left internal strabismus, and at times dysphagia was present. The patient stated she could eat breakfast more easily than her other meals, and her voice was noticed to be hoarse at the end of a conversation. Shortly after admission she developed signs of acute intestinal obstruction, and was operated on on August 5th, when some adhesions were divided. She again became emotional and depressed, and discharged herself against advice on August 20th, 1932.

A thyroidectomy was performed in March, 1933, and after this she apparently remained well until April, 1935, when she became rather depressed and sleepless. She complained of tiring easily, of choking attacks when eating, and of drooping of both eyelids. She also stated that the muscles of her neck went stiff on yawning. She was readmitted to hospital on August 20th, 1935.

On admission she stated she felt at her best at about 10 a.m. and got worse as the day went on. Right-sided ptosis was present, and there was weakness of the right lateral rectus, of both sides of the face (especially the lower part), and at times fluids regurgitated through the nose and she had some difficulty in speaking. The impedance angle was normal.

Mentally she was self-centred, anticipated special attention, and often lay in bed indifferent to anything except her own needs. At times she had retention of urine, showed intractable insomnia, and complained of vague somatic pains.

Method of Investigation

With the smaller doses of the standard solution of prostigmin*—namely, up to 2 c.cm.—reliance was placed on the usual clinical methods, such as counting up to fifty, observing the position of the upper lid, and the dynamometer readings. Effort was assessed by the number of lead shot raised by the upper lid, and also by the excursion of the needle of a sphygmomanometer dial on blowing into it. The last method suggested a means of more accurately recording effort and rate of fatigue. The patient was asked to blow into a rubber tube connected with one arm of a U tube containing mercury, the other arm of which carried a float which recorded on a smoked drum. The patient was asked to blow as forcefully and as long as possible, and a selected number of blowing efforts were recorded at each experiment. It was found convenient to record two consecutive blowing efforts on a fast drum followed by ten on a slow drum, and finally one or two on a fast drum, depending on the degree of fatigue present. Approximately five-second intervals were allowed between each blowing effort.

The amplitude of the excursion of the float recorded half the total column in millimetres of mercury supported by the effort; the measurement is thus a direct one. The photographs are of the original records reduced to one-third, and read from left to right. One patient, Case I, with marked palatal weakness, was asked to pinch her nose firmly during the experiment.

A number of normal controls by this method showed almost no variation in the height and shape of the curve after fifteen blowing efforts, and at different times showed very similar curves. It was therefore assumed that the change in type of curves of these patients was, during an experimental day, due to muscular weakness and fatigue associated with the myasthenic condition and the specific drugs used in its treatment. The blowing effort was thought to be a satisfactory test, considering the wide musculature used and the number of muscles particularly involved in myasthenia gravis. The results were confirmed in one or two experiments by recording on a drum the effects of fatigue on a finger working against a spring. The first series of experiments were done with prostigmin alone.

Results of Prostigmin Treatment

In assessing results three factors were taken into account: the length of time of effect, the time of maximum effect, and the maintenance of the shape of the curve as recorded. With smaller doses—namely, up to 2 c.cm.—objectively, improvement was noted up to about five hours, the maximum effect being reached at about one and a half hours after administration. With the larger doses the effect lasted up to about eight hours,

* 1 c.cm. = 0.5 mg. of prostigmin.

the peak of improvement being noticed about one and a half to two hours after administration. Fig. 1 illustrates these objective findings.

The shape of the curve was better maintained the higher the dosage, the records being considered at comparable times. Subjectively the effect was more prolonged, patients stating that they felt better for much longer periods of time although clinically the signs of myasthenia were again quite marked.

During the course of the experiments toxic symptoms were noted. With 1 c.cm. some discomfort was felt in the abdomen by both patients. With 2 c.cm., fifteen minutes after the injection Case II complained of shivering, while goose-flesh and pallor were noticed. This lasted for at least thirty minutes, and the abdominal discomfort increased so that she was unable to take a meal. Case I, fifteen minutes after an injection of 2 c.cm., complained of abdominal discomfort and diplopia on looking to the right. Vertical nystagmus was noted. Thirty minutes afterwards diplopia and nystagmus were still present, and five hours afterwards food gave rise to a griping pain.

These toxic symptoms were noticed in increasing severity with the higher doses; both patients complained of definite discomfort, and had to lie down for periods of one hour and longer following injection; atropine, 1/100 grain, was given with doses of prostigmin exceeding 2 c.cm. With 5 c.cm. Case II developed muscular twitchings, and Case I showed definite Rombergism in the first half-hour after injection. Dizziness and photophobia were distressing symptoms, while the pupils were constricted and the pulse slowed.

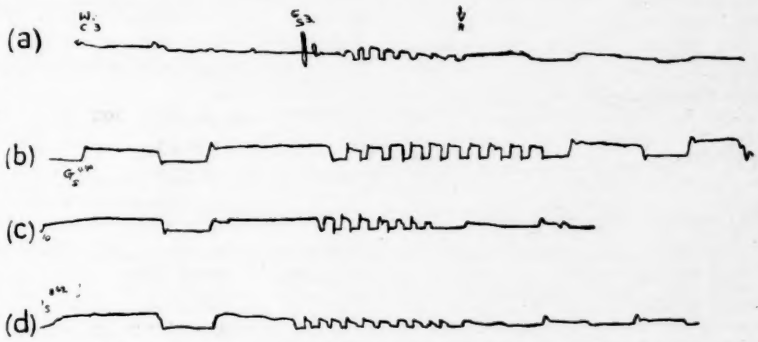

FIG. 1.—*Case I. Records of blowing efforts before and after 5 c.cm. prostigmin.* (a) Before injection; (b) 1 hour 40 minutes after injection; (c) 4 hours after injection; (d) 5½ hours after injection. In (b) the maximum effect of the prostigmin is seen.

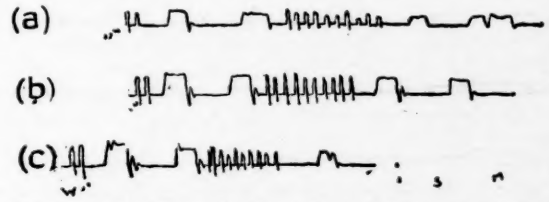

FIG. 2.—*Case II. Records of blowing efforts before and after 10 grams of potassium chloride.* (a) Before potassium chloride; (b) 1½ hours after; (c) 4½ hours after.

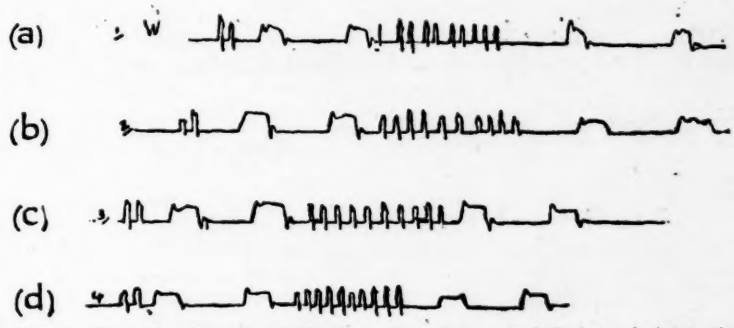

FIG. 3.—*Case II. Records of blowing efforts before and during administration of 3 grams potassium chloride two-hourly for four doses.* (a) Before potassium chloride; (b) after two doses; (c) after three doses; (d) 1 hour after four doses.

Potassium Chloride

Potassium chloride was administered by mouth, at first in a single dose of 5 grams, then in a single dose of 10 grams, and lastly in split doses of 3 grams at two-hourly intervals for four doses. With the smaller single dose Case I showed slight improvement, but Case II showed no improvement, the curves becoming progressively worse than before administration. Toxic symptoms were very apparent, and consisted of severe abdominal pains, pallor, nausea, giddiness, and rapid pulse.

With the larger single dose definite improvement was noticed in the curves up to four hours after administration in both cases (see Fig. 2), but the toxic symptoms were similar to those noticed with the smaller dose, except that they were more severe, and in addition Case I showed double internal strabismus as with prostigmin. With the repeated small doses the curves showed no improvement (see Fig. 3), while the toxic symptoms were again marked and diuresis was particularly distressing.

Prostigmin and Potassium Chloride

An attempt was made to test the prolongation of the effects of prostigmin by administering potassium chloride at the same time by mouth. The patients were given 5 c.cm. of prostigmin together with 1/100 grain atropine, and two and a half hours afterwards 3 grams of potassium chloride were given and repeated at two-hourly intervals for four doses. The curves showed possibly slight maintenance of effect for between nine and ten hours (see Fig. 4), but the toxic symptoms now almost dominated the picture. Both patients complained of severe abdominal pain, nausea, sickness, and frequency of micturition. Within the period of investigation—eleven hours—urine was voided eight or nine times. Case II jumped "as in a stroke," and felt "dreadful, as if she were going to die," while Case I complained of bearing-down pains.

Physostigmine

Physostigmine salicylate, 1/10 grain, was given by hypodermic injection, and at the same time tinct. belladonnae, 10 minims, was given by mouth three times a day. The curves showed improvement corresponding to about 4 c.cm. prostigmin, but toxic symptoms were marked (see Fig. 5). Both patients complained of feeling ill and shaky and had to lie down, and Case II nearly choked while drinking her tea. Physostigmine was also given by mouth, with some slight improvement but considerable toxic effect in both cases.

In order to eliminate the possible suggestive effect, if any, on the curves during the period of investigation of prostigmin, injections of 3 c.cm. of sterile water were given. Subjectively the patients stated they felt much better, although the curves showed no improvement (see Fig. 6). No toxic effects were apparent or were complained of.

Commentary

By the use of this method a clinical assessment was attempted of the value of prostigmin in the treatment of myasthenia gravis and the possible adjuvant effect of potassium chloride. With prostigmin alone the increase of muscle power was that observed by others, and can only be called dramatic, but in our experience toxic effects were much more prominent than would have been expected from reading the previous literature. Carmichael[11] and others, in a report to the Therapeutic Trials Committee of the Medical Research Council, indicate the effect of prostigmin in reducing the pulse rate and blood pressure. They noted slight sweating and twitching of the muscles, but without discomfort. Aeschlimann and Reinert[12] report no adverse influence on heart rate and blood pressure and little miotic effect in therapeutic doses. Pritchard[5] comments on the "feeling of stickiness around the orbits" and slight photophobia, with an increased flow of tears. Laurent[6] noted mild alimentary and ocular symptoms lasting for a few minutes only.

The toxic symptoms in our cases were alimentary, cardiovascular, and nervous, and caused the complete prostration of the patients up to periods of one hour and longer. A particularly distressing symptom was depression, with intense anxiety and fear of death. It should be stressed that this state of depression was not due to the psychopathic disposition of the patients, as Case I was a most stolid, placid type, although Case II showed many hysterical features.

Potassium chloride given to prolong the effect of prostigmin appeared to be of some slight effect, the positive value of which was counteracted by the notable increase in toxic symptoms and the onset of diuresis. Physostigmine appeared to have effects analogous to prostigmin when given by injection, but toxic symptoms were more marked.

In view of these conclusions it was felt a hopeless proposition to undertake continuous treatment with prostigmin, more particularly when patients were discharged from hospital and were not under constant medical supervision. One patient, Case I, was allowed out on a week-end pass while under treatment, and spent a large part of the time sitting in a chair owing to the toxic symptoms.

The results of prostigmin are indeed remarkable, and must be of great value in critical cases of myasthenia gravis with grave difficulty in swallowing or breathing, but in the less severe cases it would appear to us at the moment unwarrantable to hold out to patients the prospect of returning to a normal mode of life. Indeed, from the psychological point of view the presence of toxic symptoms and the relatively rapid fluctuations between the state induced by prostigmin and the myasthenic state produced periods of severe depression. For these reasons these patients were discharged and treated as out-patients with glycine and ephedrine, according to Boothby's method. Since the time of their discharge, about four months ago, they have been taking glycine 10 grams three times a day and ephedrine 3/8 grain twice daily. On this they have shown continuous slow improvement.

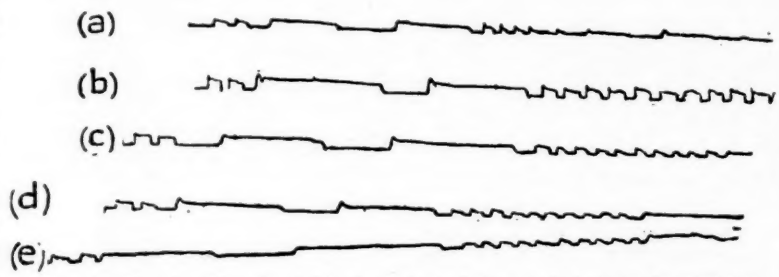

FIG. 4.—*Case I. Records of blowing efforts before and during administration of 5 c.cm. prostigmin and 3 grams of potassium chloride two-hourly for four doses.* (a) Before prostigmin; (b) 2½ hours after prostigmin; (c) 4½ hours after prostigmin and after wo doses of potassium chloride; (d) 7 hours after prostigmin and after three doses of potassium chloride; (e) 9 hours after prostigmin and after four doses of potassium chloride.

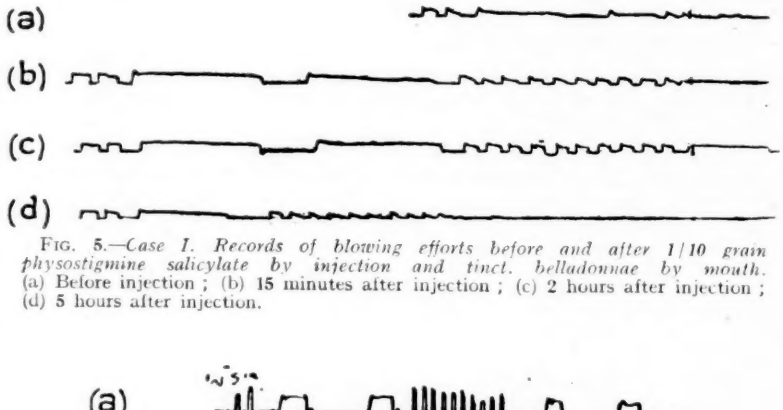

FIG. 5.—*Case I. Records of blowing efforts before and after 1/10 grain physostigmine salicylate by injection and tinct. belladonnae by mouth.* (a) Before injection; (b) 15 minutes after injection; (c) 2 hours after injection; (d) 5 hours after injection.

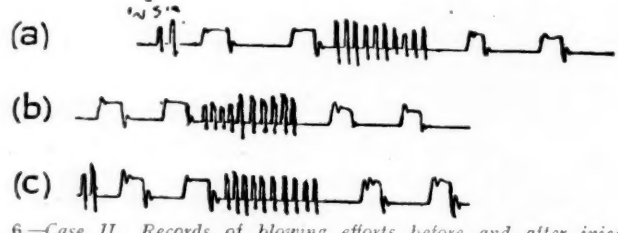

FIG. 6.—*Case II. Records of blowing efforts before and after injection of sterile water.* (a) Before sterile water; (b) 1¼ hours after injection of 3 c.cm. sterile water; (c) 2¾ hours after injection of 3 c.cm. sterile water.

Conclusions

1. The specific effect of prostigmin in the treatment of myasthenia gravis is confirmed, but its value is considerably diminished by the toxic symptoms and the difficulties in its use outside hospital.

2. Potassium chloride appeared to have little adjuvant effect, but considerably increased the toxic symptoms.

3. Physostigmine in adequate dosage produced apparent improvement, but with greater toxic effects.

We wish to thank Dr. Edward Mapother for permission to use the clinical material, and Mr. Charles Geary for photographing the records.

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TREATMENT OF MYASTHENIA GRAVIS

BY

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Since the publication of M. B. Walker's original work in 1934 many workers have proved beyond dispute that physostigmine has a definite therapeutic value in the treatment of myasthenia gravis. Although its aetiology is still obscure it would appear that the defect is neither in muscle nor in nerve, but is in some way connected with the transmission of impulses across the myoneural junctions. Several observers, including Cooke and Passmore, have suggested that this defect is probably of a chemical nature. The role of creatine and creatinine in myasthenia gravis is still unknown. It has been suggested that there is a diminished metabolism of these substances, but the excretion in the case investigated was within normal limits. It is possible, therefore, that any abnormality may be one of utilization of the formed substances rather than of the formation of creatine and creatinine from their precursors.

Treatment with physostigmine hitherto has been in the direction of alleviation of symptoms. No attempt to stabilize, as it were, these unfortunate patients has been recorded. It was towards this end that the following investigations were carried out on the two cases to be described. The aim was to control the daily life of patients by a series of injections at appropriate intervals, instead of merely relieving their symptoms for a few hours. The preparations used were the standard prostigmin solution, and also the concentrated form, especially prepared for myasthenia gravis, manufactured by Messrs. Hoffmann-La Roche Ltd. Prostigmin is the dimethyl carbamic ester of 3-oxyphenyl-trimethyl-ammonium-methyl sulphate. The observations were carried out at the Manchester Royal Infirmary.

Case No. 1

A woman of 32, a ring spinner by occupation, was admitted complaining of "talking down her nose," dysarthria, and dysphagia. The nasal speech and the difficulty in articulating her words, which symptoms she had had for some two years, were only noticeable after she had been talking for some time, and more particularly later in the day. A feature of these symptoms was that they were improved by a short period of rest. Her dysphagia was more marked towards the end of a meal, and less evident at breakfast time. Her friends had noticed a loss of expression in her face during the last two years, while she herself stated that her face is "flatter" towards the evening. She complained of no visual disturbances; there was no history of oculogyric crises, difficulty in walking, or tremor. Her previous medical history was uneventful apart from an attack of "tonsillitis" two and a half years ago, in which she complained of sore throat, and of some nasal regurgitation of fluids one week later.

CLINICAL EXAMINATION

She was fairly well built and of moderate intelligence. Her vision was good, and the optic disks were normal. There was slight bilateral ptosis, slight unsustained nystagmus to the left, and some bilateral facial weakness. The tongue was protruded in the middle line; palatal movement was sluggish; the uvula was elevated sluggishly in the middle line. The latter two symptoms were more marked after repetition. Nothing abnormal was discovered in the other systems.

X-ray of her skull proved normal. Cerebro-spinal fluid and blood Wassermann reactions were negative. Lumbar puncture showed a normal pressure, cytology, chemistry, and Lange gold curve.

The possibility of her "tonsillitis" being diphtheritic was considered, but a post-diphtheritic paresis was excluded by the length of time she had had the palsy, the fact that there had been no recovery in two and a half years, the variation of her condition during the day, and the response to treatment with prostigmin.

The diagnosis of myasthenia gravis was made, and the following treatment instituted.

Summary of Treatment

Two cubic centimetres of the standard solution of prostigmin were injected subcutaneously daily for several days. There was a considerable improvement in the speech and swallowing, and a marked alteration in her facial expression. The movements of her facial muscles, palate, and pharynx were diminished after two and a half hours, but she was able to take a meal three hours after the injections without difficulty. The dose was gradually increased to 5 c.cm. a day, and the beneficial effects were noticeable for four and a half hours. The use of atropine was not necessary, as neither abdominal pain, discomfort, nor diarrhoea was produced by the injections.

The concentrated solution in a dose of 2 c.cm. (equivalent to 10 c.cm. of the standard solution) was given with atropine sulphate 1/100 grain. The injection produced severe abdominal pain, which was not relieved by a further dose of atropine sulphate 1/100 grain, but necessitated the exhibition of morphine sulphate 1/4 grain. The effect on her myasthenic condition was not so good as with 5 c.cm. of the standard solution, and her general condition was much worse. She received further daily injections of 5 c.cm. of the standard solution without ill effects.

"Stabilization"

An attempt was now made to discover whether a series of injections throughout the day could be given so as to space out more evenly the effects of the drug. Three cubic centimetres of the standard solution were injected, without atropine, at 6.30 a.m., 11.30 a.m., and 4.30 p.m. This was repeated for several days, and it was found that, although her facial expression was fading after three hours, her palatal and pharyngeal movements were good for a further one hour.

Half a cubic centimetre of the concentrated solution, with atropine sulphate 1/100 grain, was then tried at 6.30 a.m., 11.30 a.m., and 4.30 p.m. This produced an attack of abdominal pain, requiring a further injection of atropine. The effects of the drug on her facial and palatal condition were not so good as with the standard solution—in fact she required a further 2 c.cm. of the latter in order to take a meal. This was deemed a sufficient indication for the discontinuance of the concentrated solution.

The effect of potassium chloride in a dose of 4 grams twice a day was tried, and although good results have been obtained by Laurent and Walther no effect was observed in this case, and there was no increase in the effect of prostigmin.

She was eventually "stabilized," if such a term may be used, by the injection of 4 c.cm. of the standard solution, three times a day, without atropine, and when discharged the effects of each injection were sustained for an average of four and a half hours. The symptoms returned in the following order: first the nasal intonation, then the difficulty in articulation, and lastly the difficulty in swallowing. This system of injections enabled her to take her meals without difficulty, and the results obtained were most encouraging.

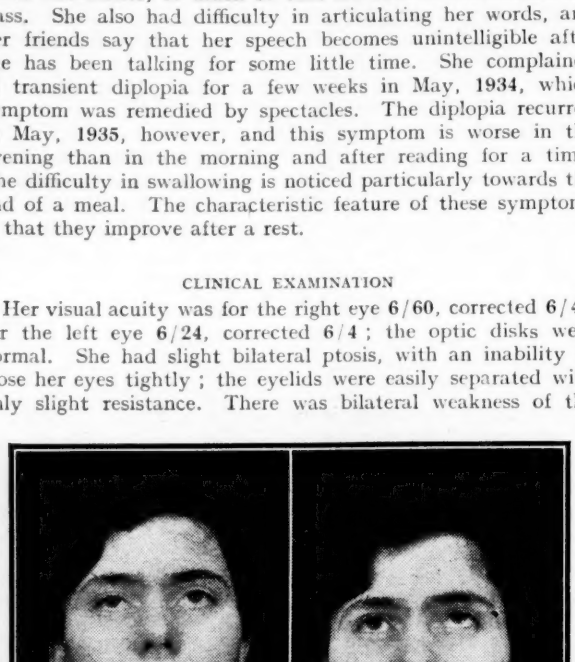
Case No. 2

A girl of 19, a pupil teacher, was admitted complaining of weakness in her voice after use, dysphagia, diplopia, and a nasal tone in her speech, with difficulty in articulating her

words. The history was that she enjoyed good health until May, 1935, when she noticed this nasal intonation on raising her voice during a practice teaching class. This at first was noticed only towards the end of the lesson, but later the onset was earlier, so much so that she had to retire from the class. She also had difficulty in articulating her words, and her friends say that her speech becomes unintelligible after she has been talking for some little time. She complained of transient diplopia for a few weeks in May, 1934, which symptom was remedied by spectacles. The diplopia recurred in May, 1935, however, and this symptom is worse in the evening than in the morning and after reading for a time. The difficulty in swallowing is noticed particularly towards the end of a meal. The characteristic feature of these symptoms is that they improve after a rest.

CLINICAL EXAMINATION

Her visual acuity was for the right eye 6/60, corrected 6/4; for the left eye 6/24, corrected 6/4; the optic disks were normal. She had slight bilateral ptosis, with an inability to close her eyes tightly; the eyelids were easily separated with only slight resistance. There was bilateral weakness of the



The photographs are of Case No. 2 attempting to look up and show her teeth—on the left just before an injection of prostigmin (6 c.cm.), and on the right one and a half hours after the injection.

masseter muscle, and slight bilateral facial weakness; poor palatal movement (worse on the left), and sluggish movement of the uvula; the tongue protruded in the middle line.

Muscle power and tone in the limbs were excellent; other systems normal.

The cerebro-spinal fluid and blood Wassermann examinations were negative. Lumbar puncture showed a normal pressure, cytology, chemistry, and Lange gold curve.

Summary of Treatment

Two cubic centimetres of the standard solution of prostigmin were injected subcutaneously. She was able to read and speak intelligibly for an hour afterwards, and her difficulty in swallowing improved. The dose was increased to 5 c.cm. daily (standard solution). The response was better, and she herself described a feeling of pulling up of her eyelids and a stiffening of her face about fifteen to thirty minutes after the injection. The effect of this dose lasted about three hours. No atropine was required, there was no abdominal pain, and at the end of two hours she was able to speak distinctly, to talk, read, eat, and smile with quite a dramatic change in her facial appearance.

An equivalent dose of the concentrated solution (1 c.cm.) was given with atropine sulphate 1/100 grain. The patient complained twenty minutes after the injection of severe abdominal pain, which was relieved by a further injection of atropine sulphate 1/100 grain, but left her feeling very weak for the rest of the day. There was slight diarrhoea, and a much diminished effect on the facial muscles. This dose was repeated for three days, but the recurrence of the abdominal pain, despite injections of atropine, was an indication for its discontinuance.

"Stabilization"

After the encouraging results obtained with 5 c.cm. of the standard solution I attempted again the continuous "stabilizing" treatment. Two cubic centimetres were given at 6.30 a.m., 11.30 a.m., and 4.30 p.m. The effects of each injection lasted about two and a half hours (average over six days). The first difficulty to return was that of swallowing, and the nasal speech was marked from two hours onwards.

The effect of potassium chloride, 4 grams twice a day and then three times a day, was tried in conjunction with prostigmin, but without any result.

Half a cubic centimetre of the concentrated solution was administered again with atropine sulphate 1/100 grain three times a day, but this solution produced such abdominal pain and discomfort that it was finally discontinued. The effect on the myasthenic condition was not so good as an equivalent dose of the standard solution, which produced no abdominal discomfort. The dose of prostigmin was increased gradually from 2 to 4 c.cm. three times a day. The average duration of the effects was found to be three and a quarter hours, and her symptoms returned in the following order: first, difficulty in swallowing, then the nasal speech and difficulty in articulation, lastly the diplopia.

Five cubic centimetres of the standard solution were given three times a day, the effect lasting on an average four hours. No atropine was given, but in this case there was slight discomfort in the abdomen thirty minutes after the injection on the second day, which was relieved by atropine sulphate 1/100 grain.

Six cubic centimetres were given three times a day and the duration of the effect with this dosage was four and three-quarter hours. An occasional injection of atropine sulphate 1/100 grain was required.

The hospital routine of meal times was disturbed in order to establish exactly how she would carry on at home, and the injections were given at 7.30 a.m., 12.15 noon, and 5 p.m. It was found that with 6 c.cm. she was able to carry out her normal routine for the day, and after three days the slight abdominal pain which she experienced had diminished to such an extent that atropine was no longer necessary. She has now been instructed to give the injections to herself prior to returning home.

Observations

The results obtained in these two cases hold out considerable encouragement for the continuous method of treatment of myasthenia gravis, and many interesting facts have been disclosed.

No atropine was required in either case, using the standard solution in doses up to 5 c.cm. three times a day, yet the use of the concentrated solution in equivalent doses produced very severe abdominal pain. The motor action on the bowel of the concentrated solution would appear to be greater than its effect on the myasthenic condition, whereas the standard solution (except in doses of 6 c.cm.) had no effect on the bowel but a most marked effect on the myasthenic condition.

The fact that the second patient required no atropine after the third day with 6 c.cm. of the standard solution favours the supposition of some tolerance to this drug, but this was only demonstrable in its action on the bowel, for no such tolerance has been demonstrated in over three months' observation of this patient's myasthenic condition.

Feldberg and Vartiainen demonstrated the beneficial effects of potassium ions in myasthenia gravis, but the administration of potassium chloride produced no effects in either case.

The creatine and creatinine metabolism was not altered by the use of prostigmin: average daily excretion of creatine (Case No. 2) was 0.02 gram per day before the injections and 0.025 gram per day after the injections.

The creatinine excretion was 1 gram per day before the injections, and 0.9 gram per day after the injections. The diet was the same during the observations, and these findings agree with those of Cooke and Passmore.

The injections produced no systemic disturbance and caused no inconvenience to the patients, and the psychological improvement in their outlook was very gratifying. The two cases are being kept under observation, and it is hoped that favourable reports of their progress will be given at some future date.

These observations have been made while holding the appointment of house-physician to Professor A. Ramsbottom in the Royal Infirmary, Manchester. I am indebted to Professor Ramsbottom and Mr. Geoffrey Jefferson for access to their cases and for helpful advice and criticisms; to Dr. G. E. Loveday and the clinical laboratory for the laboratory investigations; and to Dr. Paterson of the *x*-ray department for his co-operation in regard to the photography.

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A. A. Levi and C. M. Krinsky (*New England Journ. Med.*, February 20th, 1936, p. 362) record an investigation of the effect of administering coramine to post-partum patients under the analgesic influence of some barbituric acid drugs. The series studied consisted of forty consecutively admitted patients who had received nembutal and paraldehyde. To twenty of these patients 5 c.cm. was given intramuscularly after the third stage of delivery had been completed; the average patient had in the meantime come round from the mild degree of ether anaesthesia which had been induced. The remaining twenty served as controls, and significant differences were observed between the two groups. Recovery of consciousness supervened in an average of seven hours and forty-eight minutes in those not so treated, while the time was five hours and forty-five minutes for the coramine group. The average doses of paraldehyde were almost identically the same in all patients—namely, 4.4 grains of nembutal and 5.1 drachms of paraldehyde for the control group, and 4.7 grains and 4.5 drachms respectively for the coramine group. It was also noticed that there were fewer catheterizations necessary in this latter group. One patient, not in this series, who seemed to be dying after exceptionally heavy doses of nembutal and paraldehyde, was restored to consciousness three-quarters of an hour after the administration of coramine, and the pronounced cardiac and respiratory embarrassment passed off. The authors add that coramine is undoubtedly of value when the respiration is so depressed that the patient cannot inspire carbon dioxide and oxygen mixtures.

TREATMENT OF THE AMBLYOPIC EYE

BY

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Von Graefe once described amblyopia as a condition "where the doctor and patient see nothing"; to-day we might quite well add the reproach "and do nothing." Treatment of the virtual blindness of these eyes is almost entirely neglected after early childhood, despite the disability that it undoubtedly involves. This is the outcome of an assumption that the loss of visual acuity is either incurable, or that improvement in function such as can be obtained by treatment is not commensurate with the effort involved.

The object of this paper is to show, first, that this assumption rests on very flimsy pathological evidence, unsupported by the clinical results that can be obtained by treating amblyopia; and, secondly, that these eyes, even when the blindness is unilateral, represent in this mechanical age a grave economic and social disability more than justifying the effort of securing useful function. To assess the value of treatment I have recently treated a group of amblyopic eyes selected at random from hospital and private practice. They exhibited three clinical types of reduced visual acuity:

1. Amblyopia ex anopsia—the legacy of childhood strabismus (Cases 1 to 5).

2. Congenital amblyopia presumed to result from the presence of some developmental defect (Cases 6 and 7).

3. Amblyopia of the type associated with corneal nebulae, ametropia, or other objective evidence of interference with infantile education in macular perception. The blindness of many eyes damaged in early childhood by disease or trauma is frequently in a greater degree due to an associated amblyopia than to the optical effect of the sequels of the lesion, and their treatment may result in a dramatic increase of visual acuity, despite comparatively gross ophthalmoscopic signs (Case 8).

In my opinion these three forms have a common pathological basis, consisting of an obstruction in the psychological phase of the visual arc. This interference with conscious perception may be a purposive act to avoid the psychic trauma involved by some fusion dysfunction or the passive result of the incomplete conditioning of the pathways which subserve syncritic vision. Anatomical defects in the visual arc play, I believe, a comparatively small part in the pathology of amblyopia.

Toxic and similar forms of amblyopia are not considered, as their connexion with these groups is only an accident of nomenclature.

The Value of Treatment

There are certain unproven assumptions regarding the pathology of the amblyopic eye which have tended to discourage efforts at treatment. It has been assumed that a progressive and irreversible deterioration from disuse takes place somewhere in the visual arc of the "lazy" eye. Certainly, as the suppression becomes more habitual the residual function tends to get less until only perception of light with no power of central fixation may remain. This does not necessarily mean, however, that any concurrent organic change in the eye or central pathways has taken place. In fact, careful histological examination has failed to demonstrate any secondary change.

There is, therefore, no *a priori* justification for presuming that, if the suppression habit is overcome, a return of visual function might not be expected. The results

of my treatment, quoted later, show this to be the case. Even without treatment cases have been reported in which an increase of visual acuity has spontaneously occurred in amblyopic eyes, due to the psychological urge following the loss of the good eye. A recent example was reported in the *British Medical Journal* (1935, ii, 113) by Mr. A. W. Green. The patient at the age of 35 had a right vision of less than 6/60. Following the loss of sight of the left eye due to optic atrophy the vision in the amblyopic eye gradually improved to 6/6 and J1. Such cases show that a secondary organic and irreversible deterioration in the visual arc is not an inevitable sequel to amblyopic suppression, if in fact it ever occurs.

The presence of some form of macular developmental defect is presumed to be responsible for "congenital" amblyopia. Such lesions would, of course, make a high degree of macular perception impossible, and the assumption that they are of frequent occurrence has further tended to discourage efforts at treatment. Such congenital lesions do exist, but histologists have failed to find any such defects in the majority of amblyopic eyes submitted for examination (Friedenwald, Heine, Lehrmann). In addition, the clinical history of an amblyopia due to such a lesion would be different from that associated with congenital amblyopia, for nystagmus or "wandering" movements would replace the usual concomitancy.

Statistical evidence is insufficient to enable one to estimate the incidence of congenital aberrations, but I believe that most of these eyes are in reality the result of some transient infantile interference with macular education. The essential pathological lesion is in fact central, not peripheral. Certainly I have never treated an amblyopic eye the visual acuity of which in the absence of nystagmus could not be improved to better than 6/60, the threshold for extra-macular perception. The number of such cases treated so far is, however, too small to enable me to draw any final conclusions.

The indifferent results obtained in the past by the treatment of established amblyopia have also tended to confirm the assumption that either a causative or a secondary organic lesion is present in the visual arc. In addition, the prolonged and tedious methods employed may have justified a certain hesitation in even making the attempt.

The following notes are therefore of interest to show the results that can be obtained by treatments given once or twice a week over a comparatively short period. They represent a series of ten cases which have been given six to ten weeks' treatment at the Royal Eye Hospital and in private practice. They were originally selected without regard to age or degree of visual acuity. Of these, eight have secured a return of useful visual function in the amblyopic eye, and have acquired binocular vision. The other two patients (men aged 47 and 27) have secured central fixation and an increase of visual acuity, but their progress has been much slower and they are still under treatment.

The following table shows the ages and the visual acuity obtained by the eight successful cases.

All the strabismus cleared up during treatment, except in the case of No. 5, who had had a tenotomy of the left internal rectus at the age of 16. He secured central fixation, and after a secondary advancement should secure full binocular control and a further increase of vision. Simultaneous perception and some amplitude of fusion were obtained by every patient. My experience of examining some old cases suggests that the latter increases with use.

Examination of these results shows that there is no justification for neglecting the treatment of an amblyopic eye on the grounds of its presumed incurability. It remains, however, to examine the advantages gained by substituting binocular vision for the monocular function, for the final criterion of the value of any treatment lies obviously in the benefits it gives to the patient.

Case	Sex	Age	Condition	Vision Before Treatment	After Treatment
			Group I: Amblyopia ex anopsia		
1	F.	7½	Left convergent strabismus 20°	Left eye, 6/60	6/6
2	F.	15	Right convergent strabismus 35° since 5 years	Right eye, 6/24	partly 6/6
3	M.	17	Right convergent strabismus at 3 years	Right eye, 6/60	6/9
4	M.	37	Left divergent strabismus 15°	Left eye, count fingers only	6/9
5	M.	38	Left divergent strabismus 45°	Left eye, 6/36	partly 6/12
			Group II: "Congenital" Amblyopia		
6	F.	18	—	Left eye, 6/60	6/6
7	F.	22	Left eye, lost fixation	Right eye, 6/60 Left eye, hand movements only seen	6/6 6/6
			Group III: Sequels		
8	M.	27	Corneal nebulae since infancy	Left eye 6/36	6/9 partly

Disabilities of the Amblyopic Eye

The value of useful vision to a bilateral amblyope is too obvious to require stressing. Bilateral amblyopia may follow, *inter alia*, any form of prolonged occlusion during early childhood, or even the relative occlusion of uncorrected ametropia. Moulton recorded two cases (*Ophthal. Record*, 1903), and H. Herbert (*Cataract Extraction*) reports that following successful operations on neglected congenital cataracts in India "some of our patients could see only moving bodies" owing to "amblyopia from disuse." A case of amblyopia associated with ametropia was reported (*New England Ophthal. Soc.*, 1929) with eight dioptres of hypermetropic astigmatism, the vision being little more than perception of light.

The intrinsic desire to see more will lead to a spontaneous improvement in many cases, but in others this does not occur. In Case 7, for instance, the patient had been virtually blind since birth. Until the age of 14 she had been continually under treatment for corneal ulcers. This had involved long periods of complete or relative ocular occlusion. Since it had been considered advisable to rest her eyes, her refractive errors were not corrected until the age of 17. The errors were high (at present: right eye − 0.25 D.S. and + 1.50 D.C. vert.; left eye + 4.00 D.S. and + 3.00 D.C. Ax. 80), and the combined effect of the keratitis, therapeutic occlusion, and dioptric distortion was a vision at the age of 22 of right eye 6/60, left eye hand movements only, despite correction. During her childhood her vision had been little better than that described above by H. Herbert. As a child she thought all faces were black. After refraction her vision had improved, but she was still unable to read or to follow any occupation requiring even fair visual acuity. She was under the impression that during the past year her vision had got somewhat worse again, but this belief was probably the effect of a not unnatural anxiety regarding her condition. Examination revealed corneal nebulae in both eyes too fine to affect vision to any serious extent. The media, fundi, and general condition showed no abnormality. Binocular movements were normal, but on occlusion of the right eye the left eye "wandered" in its attempt to secure fixation. An eccentric fixation by an area in the temporal retina was favoured, but the patient had little power of maintaining it.

I have recently seen two further examples of this condition. Each patient had high errors of refraction, especially astigmatic, which were not corrected until comparatively late in life (38 years and 21 years).

The genesis of this amblyopia is the imperfect facilitation in childhood of the central pathways which subserve macular perception. It is more likely to occur if the ametropia is associated with any other ocular lesion, such as nebulae and subnormal pigmentation. In the absence of treatment the low visual acuity of these cases bars them from a full enjoyment of life, and keeps them in a condition of perpetual economic dependence, or, at the best, in the ranks of unskilled labour.

The visual handicaps entailed by unilateral amblyopia, while not so obvious, are nevertheless very real. These people rarely practise simultaneous perception, even when they have a fair degree of visual acuity in the amblyopic eye. They are therefore functionally monocular. This involves a reduction of their field of vision and the loss of the advantages inherent in the possession of a common field.

Field of Vision

Increasing traffic congestion and the mechanical complexity of modern life have tended to focus attention on the minimum visual requirements of drivers and others with similar responsibilities. The binocular field normally covers slightly over 180 degrees, of which 120 degrees is common field in which the benefits of binocular fusion should be enjoyed. Outside this, in the uniocular fields, one should be aware of any untoward happening. The normal motor car driver should therefore have warning of the approach of a pedestrian or a car cutting in from any point in front of the level of his driving seat.

The driver with an amblyopic eye, however, has no functioning common field, and no uniocular field on the blind side. The effect of this, with a left amblyopic eye, would be to prevent his being aware of a pedestrian leaving the curb at any point within twenty feet ahead when his car is about four feet from the pavement. If the right eye is amblyopic the limit of his field would meet the pavement some twenty yards ahead in a street of average width, and consequently he has no warning of danger coming from this blind area.

The regulations in Great Britain at present permit driving without reference to the visual fields. In America, however, certain States (Ohio, Minnesota, and Delaware) have already prohibited monocular drivers, and Maryland demands the possession of binocular vision. Other States have varying requirements based on the extent of the fields. R. E. Mason (Missouri) has recently published some interesting observations on this subject.

Visual Acuity

Under the usual conditions of his normal life the amblyope may not experience much handicap from the loss of the macular perception of his blind eye. He has generally adapted, consciously or unconsciously, his occupation and recreations to his visual limitations. Such theoretical benefits as increased luminosity and power of discrimination conferred by fusion have not been experienced by him, and in normal circumstances are not missed. Under unusual conditions, however—for instance driving in a fog, or a sudden change of occupation—he will find that he is much less adaptable than his binocular brother, and his accident proneness is correspondingly greater.

The danger of virtual blindness owing to disease or trauma affecting the vision of the good eye is an ever-present menace. Such cases are not uncommon. Unfortunately, a spontaneous increase of vision in the amblyopic eye under these circumstances is too rare to be taken for granted.

The exclusion of the amblyope from many private and public services may interfere with his entry to his chosen career or jeopardize his advancement. In Case 3, for instance, the patient has been specially trained for a service into which the presence of his amblyopic eye would have prevented his entrance.

Perception of Depth

Our judgement of distances with our appreciation of stereoscopic effect is to a large extent a function of binocular vision. As with the functions already dealt with, the amblyope has usually adapted himself to its absence at the expense of sacrificing sports and occupations which he might otherwise have enjoyed. Nevertheless, under unusual conditions, his adaptation is liable to break down and expose him to dangers which, with binocular vision, he might have avoided.

Strabismus

The psychological effect of the squint, so frequently associated with an amblyopic eye, is insufficiently appreciated. The outspoken comments of school companions may have an important and permanent effect on a child's character. Operative adjustment of the deviation is of no functional value, and even the cosmetic improvement is frequently disappointing. Later in life, with the gradual loss of central fixation, a disfiguring divergent strabismus frequently develops, to add a further social handicap to the amblyope.

Conclusions

1. The virtual blindness of the amblyopic eye is a symptom of a psychological inhibition. The presence of any causative or secondary anatomical lesion is largely conjectural.

2. The disability involved by the loss of binocular vision and the risk of total blindness, should their only functioning eye become damaged, makes a return of vision, to even the unilateral cases, of the highest importance.

3. There is no justification for regarding these eyes as incurable after early childhood, and consequently abandoning any effort at treatment.

4. Both in childhood and in adult life a useful degree of visual acuity and simultaneous perception can usually be restored, and with these the disappearance of any associated squint.

On May 25th representatives of local authorities and other organizations co-operating with the Department of Scientific and Industrial Research in the investigation of atmospheric pollution met in conference. Dr. H. A. Des Vœux, a past chairman, presided. A report was received from Dr. G. M. B. Dobson, F.R.S., chairman of the Atmospheric Pollution Research Committee, on the progress of the researches carried out under the committee. He announced that the committee had decided to undertake an intensive survey of the pollution in and around an industrial centre, and had chosen Leicester, whose geographical position in relation to the surrounding country and neighbouring centres of population appeared to render it particularly suitable. This proposal had been cordially received by the authorities of the city, who offered full co-operation. The conference noted with interest that the London County Council had intimated that it was extending its investigations and observations in various directions, and that it was, in particular, arranging for observations at a rural institution and a seaside institution belonging to it. Reports from Glasgow and from Sheffield and Rotherham were presented on comparative determinations of sulphur in filtered and unfiltered air. Measures were discussed for reducing pollution due to the emission of ash and grit from chimneys.

TREATMENT OF FUSO-SPIRILLARY INFECTION OF THE GUMS

BY

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Now that agranulocytosis is exciting interest all over the world it may be opportune to draw attention to an aetiological factor which is commonly present in the anginal form—namely, the fuso-spirillary symbiosis, or Vincent's infection. The tenacity of this infection, once it has gained a place in the mouth, is remarkable, and leads to a chronic state of so persistent and uniform a degree that the pathogenic potentiality of the disease, unless it flares up, is forgotten. The microbes are commonly regarded as normal saprophytes of the mouth and necessary concomitants of the common type of paradontal degeneration which the average adult of both sexes sooner or later exhibits. That they are not so, however, is shown by any sequence of bacteriological examinations of the gums of different individuals. Indeed, many patients have considerable pyorrhoeic destruction and "pocketing" with a flora confined to leptothrix and cocci. On the other hand, it must be admitted that the fuso-spirillary pair are often found in even trivial gingivitis, but this does not absolve them from pathogenicity. As an examination of the literature shows, many a patient has paid for harbouring them, sometimes with his life. Hannson,[1] Kritchewsky and Seguin,[3] Gornouec,[4] Thompson,[5] Palmer and Carr,[6] to quote only a few instances, report cases where the removal of a tooth, especially the lower wisdom tooth, has been followed by a severe fulminating Vincent's stomatitis. Five of the cases cited ended in death, and they show several points in common with some of the cases of "agranulocytosis" excited by dental extraction,[7 8] or by the slighter trauma of "scaling."

Three features of the disease are worthy of emphasis. One is the way it persists in a subacute or chronic form after an acute attack, and leads at times to remote secondary lesions. Goadby,[9] for example, relates a fatal case of sudden fuso-spirillary empyema in an apparently robust man eighteen months after an acute attack of Vincent's stomatitis. The second feature is its ability to gain an insidious entrance to the gingival tissues, so that a widespread and painless infection involving all the teeth is well established before any symptoms appear. The third feature is the predisposition—like that of recurrent agranulocytosis—to intermittent fulmination in the mouth and fauces, following periods of quiescence which sometimes last many months.

Epidemiology

The epidemiological characteristics of the disease were particularly apparent during the great war, when "trench mouth" was responsible for a large amount of invalidism in the troops.[10 11 12 13] In 1917 the epidemic at Adrianople caused a number of deaths.[14] While its communicability has always been recognized, the disease has not been made notifiable in this country, but in the U.S.A. Vincent's infection has been reported monthly by at least seventeen States since 1926.[15] It is alleged to have been spread there by home-coming troops from Europe, and some alarm is felt at its continued increase.

Here in England, in hospital practice since the war, there seems to have been a steady dribble of cases, accompanied, as shown by Stallybrass,[16] with seasonal rises; but an increased incidence has certainly become apparent in private practice, especially in the fashionable and cultured. This spread to a class hitherto immune coincides with the appearance of agranulocytosis in this country—that is, from 1929 onwards. Adams, quoting from Krache and Parker,[17] notes that in the U.S.A. agranulocytosis "affects mostly the better-class section of the community. Kitchin,[18] discussing periodic or recurrent agranulocytosis, describes a tendency to chronicity associated with the common presence of Vincent's organisms, and Hartfall[19] also speculates upon their aetiological significance. The close affinity of Vincent's infection to noma should also be borne in mind.

Importance of Prophylaxis

If these diseases are connected early recognition and treatment of fuso-spirillary infection of the mouth—especially in the subacute and latent cases—should not only lower the mortality from Vincent's disease, but should also reduce the gravity of agranulocytosis. Moreover, an attack of Vincent's does not confer immunity, and patients become "carriers," so it is important to treat this infection of the gums with greater thoroughness than is usual—which, indeed, its potentiality for harm demands. Smith, in the introduction to his monograph[20] on the various manifestations of fuso-spirochaetal disease about the body, emphasizes its preventability. He says:

> "Finally, this is a preventable disease. The source of the infection is in diseased tonsils and diseased gums, and if these foci are eliminated then all the local and general infections with these anaerobic organisms might be prevented."

Nevertheless, from a dental point of view, treatment is difficult. Most topical and intravenous treatment, as subsequent bacteriological smears show, is only partially curative, and patients are reluctant, even after a severe attack, to consent to a prophylactic clearance of the teeth, though they might readily part with their tonsils. It seems worth while, therefore, to describe the only method which in my hands has yielded total and permanent elimination of the infection. It is sometimes laborious, but it is successful, as bacteriological rechecking proves, and it is based upon twenty years' experience. Smith postulates:

> "Since the essential organisms in the disease are anaerobic, open drainage and free access of air are indicated."

This is the foundation of my technique.

Treatment of Acute Stage

When the case is first seen the diagnosis is confirmed by smears. A differential blood count should be made to detect any concurrent leukaemia or agranulocytosis, which should receive appropriate treatment at the same time. The patient should be isolated in a nursing home, where saliva-bearing articles can be effectively controlled and uninterrupted treatment maintained. The ulcers are very lightly scraped and washed clear of the pseudo-membrane by a thorough syringing with hydrogen peroxide, or, better, by a de Vilbiss dental spray containing normal saline and connected through a reducing valve to a cylinder of oxygen. It is important that the operator and attendant nurse should be protected by gloves, gown, and mask. If this cleansing is done delicately but copiously the necrotic debris is entirely removed, and a bleeding surface at the base of the ulcer is revealed. This raw area is painted with an escharotic, preferably pure carbolic acid, and the patient washes the mouth every half-hour during the daytime with a warm sodium perborate solution (one drachm to a tumbler of water). This treatment will rapidly reduce the acute symptoms; in twenty-four hours the ulcers will be clean and fibrin-covered, and in a few days epithelialized.

After meals the mouth, and especially the interdental spaces, should be sprayed to remove food debris. Bowman's mixture[22] of vin. ipecac. ʒ iv, glycerinum ʒ j,

liq. arsen. (Fowler) ad ʒ j, or some other arsenical preparation, applied locally, may accelerate resolution by attacking the treponemata. Intravenous kharsivan and similar products are probably of great use in helping to arrest widespread ulceration of the cheek and fauces, but are particularly disappointing in the treatment of the gingival form, mainly because the organisms lodge in mechanical crevices and in the necrotic tissue of the gingival troughs, out of reach of the circulation. Indeed, the essence of treatment is to remove by physical means

Reproduction of Vincent's original illustration of a smear.[21]

the felt-like protection of slough and apply the medicaments to the freshly invaded surface, which is then kept clean and aerated by the oxygen-liberating mouth-wash. It is of practical importance, therefore, that the patient be encouraged to maintain for the first two days a continuous atmosphere of oxygen in the mouth.

After the first twenty-four hours the gums are no longer tender, and the gross tartar, which is a hindrance to easy flushing of the interdental spaces and the gingival troughs, should be removed. Scaling should not be attempted on the first day, but every succeeding day should see a progressive clearance of tartar. As the healed surface hardens the patient carries out an appropriate toilet with interdental tape and a soft toothbrush sterilized in spirit.

Bacteriological Examination

The acute ulceration disappears rapidly and easily, but it is a fallacy to suppose that the fuso-spirillary infection has thus been banished from the average mouth. At this stage it is wise to check the bacteriology by smears taken from representative sections of the denture. A negative result may be expected in the freely cleansable places, and a positive one in such uncleansable sites as pre-existing pyorrhoea pockets, under the margins of leaking or ill-fitting crowns and fillings, around dead roots, and in the deep circumvallate gingival trough of partially erupted and misplaced wisdom teeth. The crypts of the tonsils should also be examined. These places are the sites of persistent infection in the subacute and chronic cases (common in private practice), where the fuso-spirillary organisms have gained a habitat insidiously without provoking acute ulceration, and it should be recognized that the average acute case treated with mouth-washes, no matter how thoroughly, does no more than resolve itself into one of this kind. I have never yet seen the organisms totally eliminated from all parts of the mouth so long as these catch-pits remain to become foci from which sporadic fulminations occur. Therefore, unless smears from many sites taken at this stage are negative, treatment must be continued as next described.

Sub-acute Stages

These are the stages most popularly confused with paradentosis or pyorrhoea, with the result that the patient is often dismissed with a diagnosis of "gingivitis" and told to use an antiseptic mouth-wash. A bacteriological examination is necessary to confirm the diagnosis, but certain characteristic clinical features are usually present. In the subacute stage the gums are swollen and purplish-red at the gingival margins, but not necessarily round the whole denture. Only certain teeth, where stagnation is more prevalent, may be affected. There is a strong tendency to bleed upon light digital pressure or spontaneously. Although in the later stages the loosened teeth may become tender, there is no pain in the earlier stages nor undue tenderness in the gums. Very often the patient's first symptom is to find one morning a blood-stained patch of saliva on the pillow, or to notice during conversation a sudden and irritating seepage of blood into the mouth. The characteristic fetor may be present in the breath, although it might be unperceived in more fastidious patients.

Chronic Stage

In the chronic stage the gums are shrunken rather than swollen, and are normal in colour, but around the more grossly affected teeth there are extensive pockets, which bleed easily on the introduction of a fine blunt seeker. Patients of this subacute and chronic group are "carriers." They are a menace not only to other people, but to themselves as well, for they do not acquire immunity. At any time an acute and fatal exacerbation in the mouth or throat may supervene, or remote disease may be started.

"Situated in the tonsils and about the teeth they [Vincent's organisms] are in a strategic position to initiate disease locally in the tonsils, gums, cheeks, tongue, pharynx, and larynx; or to invade the eyes, ears, or sinuses. They may be aspirated and infect the trachea, bronchi, or lungs; or may be swallowed and cause disease in the oesophagus, appendix, or colon; by means of fingers contaminated with saliva these anaerobic organisms may be carried to the skin or to the external genitalia. Through emboli they may reach the brain, lungs, or other internal organs" (Smith).

Furthermore, the lesions around the teeth produced by fuso-spirillary destruction are favourable sites for intercurrent invasion by the strepto-staphylococcal group, and therefore superadded to the menace of fuso-spirochaetal disease are those of acute local pyogenic infection, such as osteomyelitis of the jaw and spreading cellulitis of the neck, and of chronic toxaemias and bacteriaemias. At best the persistence of Vincent's organisms in the mouth leads to gross destruction of the alveolus of the dental sockets, and admits at the same time the organisms producing the common chronic toxaemias. At worst it leads to unexpected death either of the patient or of a contact.

Diagnosis

Chronic Vincent's infection (in which is included the subacute stage) is a disease of filth and stagnation. It is never seen in the edentulous mouth. It is not seen in all parts of the averagely clean mouth, but only in those places where effectual toilet is lacking, and where, *per contra*, miniature cesspits exist—that is, where the patient is lazy or where uncleansable "pockets" prevent his attention being effective, however hard he tries. Likewise, it is found in the depths of the tonsillar crypts. The incidence and persistence in unhygienic areas of the gums is stressed by many writers: D. T. Smith,[23] Colyer and Sprawson,[24] Mead,[25] Gill,[26] Dalitsch,[27] Puterbaugh,[28] Goadby, Bunting,[29] Davenport,[30] and others. Consideration of the morbid anatomy and the predisposing local factors, therefore, indicates the line of effective treatment.

Diagnosis is confirmed by smears, and is easy and positive. The only difference between the stages to be recognized in the smears is the greater predominance of the fuso-spirillary organisms in the acute phase. There appears to be no significant change in shape, size, or staining properties to indicate whether the specimen is from a fulminating mortal case or from a "carrier." In the more chronic stages the proportion of the two organisms to each other, which is roughly equal in the acute conditions, tends towards the reduction of the fusiforms, and at the same time other organisms common to septic "pockets" creep in. A full set of dental radiographs is required to show the degree of destruction of the alveolus, the presence of "pockets," dead teeth, obscure carious cavities, and ill-fitting crowns, fillings, and bridges, and the state of partially erupted teeth. A minute clinical dental examination, along with skiagrams for comparison, enables a scheme of treatment to be drawn up.

Scheme of Treatment

In the first place, on the principle that ultimate success depends upon an extreme degree of oral cleanliness, the patient must be instructed in the *raison d'être* of the therapeutic measures, and his complete co-operation in prophylaxis must be enlisted. He should be shown a method of oral hygiene which has as its object the meticulous cleansing of the gingival sulcus around each and every tooth, by means of toothbrush, dental tape, and spray.

All old amalgam fillings are removed and carious holes are cleaned, the cavities thus left being filled with fresh cement until satisfactory permanent fillings can be inserted. Fixed bridges, harbouring putrefying food, and ill-fitting shell crowns are also taken off, leaving the spaces cleansable. "Pockets" are noted for excision and dead teeth for removal. Measures should also be taken to counteract persistent mouth-breathing. Finally a critical scaling of all subgingival tartar is performed so that the necks of the teeth are left perfectly clean.

Dental Technique

Under intratracheal anaesthesia an attempt is made to deal with the whole mouth at one session. The dead teeth having been removed and the peridontal sockets having been excised to their full depth and curetted, an electrocautery point is passed into the gingival sulcus around *every* tooth. The resulting coagulum is scraped and irrigated away. By this means, and by this means only, is a clean granulating surface left. Mouth-washes of hot sodium perborate solution and frequent irrigations with hydrogen peroxide are instituted during healing, which takes place rapidly and without discomfort. After a few days a searching bacteriological examination is again performed. The result should show only a few cocci and pus cells, significant of a healthy reaction. Should any spot disclose spirilla or fusiforms it must be treated again under an injection of novocain. The object of the treatment is, in the first place, to open up and clean out all stagnant areas, and, in the second place, to deal an effective blow at the Vincent's organisms by cauterizing the whole of their habitat at one operation. It is commonly thought possible to save the patient the expense and trouble of a nursing home by dealing with the mouth in stages in the dental chair under block novocain. The obvious disadvantage, which is proved by experience, is that the newly cauterized area becomes reinfected from the untreated places, and eventually it becomes obvious that no progress has been made.

A common focus of recurrence is found in the third mandibular molar. Even when fully erupted this tooth rarely emerges so clear of the gum that it does not have a deep uncleansable sulcus behind it. When it is semi-erupted or impacted the pocket left under the hood of mucous membrane forms a nidus which, in several recorded cases, has not only led to repeated recurrence of the acute infection, but has been responsible for the death of the patient. These teeth should be extracted whilst the condition is under control.

Finally, when the mouth has healed and is bacteriologically clean, the tonsils, if they still harbour the organisms, should be removed before the gums become reinfected from them.

Conclusion

Vincent's infection of the gums is a preventable and a treatable disease, but it is essential that every detail of the denture be freely cleansable by the patient. The difficulty is that where many teeth are filled and fixed appliances are worn few patients can afford the large amount of therapeutic and dental restoration work which is entailed, and half-measures are useless.

Case Reports

CASE I.—ACUTE CASE UNCOMPLICATED BY FILLINGS, ETC.

October 8th, 1931.—A male aged 22 had gums previously very healthy and teeth more than normally clean; he had completed a dental overhaul two months previously. He contracted acute ulcerative gingivitis in Paris; the gums were painful and were bleeding easily. The teeth were festooned all around the denture by marginal ulceration; typical appearance and fetor. Bacteriological report on smears from several places (Dr. I. H. Maclean): "Films show a large percentage of red cells. Main organisms present: Vincent's spirilla 90 per cent., *B. fusiformis* 9 per cent., cocci 1 per cent. Pus cells rare. This film is the picture of an acute phase of ulcerative stomatitis when the spirilla are in the ascendency, and there is very little reaction by way of pus cells by the patient."

October 8th, 1931.—Treated as outlined above, but with immediate cauterizing of the complete series of gingival troughs, after preliminary cleansing of the ulcerated area.

October 13th, 1931.—Smears made from sixteen representative areas around the teeth. A few pus cells were seen and cocci in all films, except that of one upper molar space. Comment: "The films show a great improvement on those of October 8th, and the only part where the infection can now be recognized is in the molar region 76/" (I. H. Maclean). This isolated region was cauterized again and rapid healing occurred, leaving the gums perfectly healthy in colour, texture, and alignment.

December 20th, 1935.—Patient reported by letter from abroad that he continues to employ the method of dental toilet prescribed, and has had no return of the gingival symptoms.

CASE II.—CHRONIC VINCENT'S GINGIVITIS. REINFECTION FROM TONSILS

A female aged 35 complained of bleeding from the gums. She had been treated for "pyorrhoea," but without avail. A diagnosis of chronic Vincent's infection was made. Six sites were sampled for bacteriological examination (March 26th, 1935), and the same six sites, after cauterizing in a nursing home (April 5th, 1935), were later resampled (April 10th, 1935). These were examined by Dr. J. D. Benjafield, who reported as follows:

Site	March 27th, 1935. Before treatment			April 10th, 1935. After treatment		
	Pus	B. fus.	Spir.	Pus	B. fus.	Spir.
/1	+	+ (few)	+	nil	nil	nil
2/	+ +	+ +	+ +	+	"	"
7/	+ +	+ +	+ +	+	"	"
/1	+ +	+ +	+ +	+	"	"
1/	+	+	+	nil	"	"
7/	+	+	+	+	"	"

Comment on report (April 10th): "The amount of pus present was very slight."

Healing occurred uneventfully and the patient remained well for two months, when she suffered from laryngitis with aphonia. Re-examination of the gums showed slight sponginess in the lower incisor teeth. Six suggestive sites from the gums and both tonsils were examined. Dr. Benjafield reported (June 28th, 1935): "All smears negative for Vincent except $\overline{32}|$ and $|\overline{23}$." It had not been possible to obtain satisfactory smears from the tonsillar crypts because of gagging, and the tonsillar films showed only "some pus cells and a mixed flora of organisms." Dr. Benjafield commented: "I am of the opinion that the tonsils constitute a definite septic focus from which the gums are being, and are likely to be, reinfected. The fact that Vincent's organisms were not found in the films from the tonsillar exudate does not necessarily exclude the possibility of their being present in the deeper part of the tonsils. In any case the rather poisonous flora grown in cultures justifies seriously considering the advisability of tonsillectomy."

CASE III.—INEFFECTIVENESS OF MOUTH-WASHES, SPRAYS, ETC.

A female aged 34, in bed making a difficult recovery from concussion after a motor accident, complained of acute soreness of the gums with typical fetor (July 31st, 1935). Smears from six sites were all heavily positive and typical of acute Vincent's infection. Dr. I. H. Maclean's comment is: "From the large numbers of spirilla and *B. fusiformis* this case suggests that there is some acute spirillary infection." Her dental surgeon reported that the patient had been a most fastidious woman, who regularly attended every two months for prophylactic polishing of the teeth, and that her gums had always been healthy. Presumably inability to attend to oral hygiene during the period of disablement (four and a half weeks) had allowed a state of stagnation of food which permitted the Vincent's organisms (source untraced) to gain a habitat. The patient was treated with intensive irrigation, spraying, and mouth-washes of hydrogen peroxide and sodium perborate solution, etc., as detailed above under the treatment of acute cases. The acute symptoms subsided and she was not cauterized. She returned on October 1st, 1935, for further examination after a sea trip for convalescence. In spite of assiduous home treatment, when re-examined the gums presented evidence of chronic fuso-spirillary infection, and ten sites selected for bacteriological examination (Dr. Lionel Whitby) were all positive for Vincent's infection. Dr. Whitby's comment reads: "The smear results show a heavy infection with Vincent's organisms around the $\overline{7}|$ and $\underline{8}|$, and a moderate infection round the $\overline{6}|$ and $\overline{7}|$. All other specimens showed small numbers of the same organisms, from which it may be deduced that the condition has at one time affected the whole mouth and is as yet not completely eliminated."

CASE IV.—INEFFECTIVENESS OF MOUTH-WASHES, SPRAYS, ETC.

A female aged 35 was admitted to a nursing home with acute Vincent's infection around all the gums. The infection was ultimately traced to a house-party where the host and hostess proved to be the "carriers," and of the guests three others besides the patient are said to have caught the contagion. This patient first became aware of having an oral lesion by repeated spontaneous haemorrhage from the gums. Smears were taken six weeks later during an acute attack. Dr. John Matthews reported (July 22nd, 1935) that all seven sites examined were positive. The patient was treated with scaling, spray, mouth-washes, etc. The acute symptoms rapidly subsided; the gums healed and appeared normal. In view of the encouraging improvement she decided not to be cauterized, but to see what she could achieve by her own efforts. She carried out her home routine enthusiastically at first, but relaxed later. When re-examined (January 23rd, 1936) the mouth and teeth were generally clean, but close inspection indicated signs of chronic infection. Smears taken from eighteen sites showed pus (sometimes very profuse), with leptothrix and streptococci in all the sites, and Vincent's organisms (sometimes in prodigious numbers) in eight of them.

CASES V AND VI.—NON-CAUTERIZING VERSUS CAUTERIZING

A female aged 38, and her husband aged 47, sought treatment because of bleeding and puffiness of the wife's gums. Clinically both patients presented symptoms of chronic Vincent's infection. Smears of wife (April 19th, 1933) and of husband (April 24th, 1933) were both heavily positive from several sites. Dr. I. H. Maclean's blood counts and commentaries were:

Wife's blood count (April 26th, 1933): red cells, 3,800,000 per c.mm.; white cells, 10,000 per c.mm.; haemoglobin, 76 per cent.; differential count—polymorphs, 56 per cent.; lymphocytes, 40 per cent.; other cells, 4 per cent. "The persistence of the *B. fusiformis* tends to show that the condition has reached a chronic stage, and there is a larger percentage of pus cells than usual in most ulcerative stomatitis. There is some anaemia, which is associated with an increased number of lymphocytes. These also show the chronicity of the disease, and that in the past the patient has not made a very good response to her infection."

Husband's blood count (April 26th, 1933): red cells, 4,920,000 per c.mm.; white cells, 7,000 per c.mm.; haemoglobin, 96 per cent.; differential count—polymorphs, 62 per cent.; lymphocytes, 36 per cent.; other cells, 2 per cent. "There is definite evidence of ulcerative stomatitis present in this patient. In the molar region it has reached the subacute stage with no evidence of healing. In the incisor region there is only a mild infection. The disease has so far had only local effects, and there is no evidence by the blood count that the patient's general health has suffered."

The wife, an American married one year to an English husband, gave a history of having suffered from an acute attack of Vincent's angina several years previously. This had been treated upon orthodox lines and was presumed to have been cured, but evidently persisted in her gums and she became a "carrier." The inference on the clinical, the bacteriological, and the haematological evidence is that she infected her husband. It was obviously necessary to treat both patients. Both were treated alike according to the method for subacute and chronic cases—that is, meticulous scaling, the removal of all crowns and leaking fillings, topical applications, and an intensive home routine. The husband consented to be cauterized (May 4th, 1933), but the wife, promising to redouble her efforts, refused. Forty-six days later smears were made from both patients from seven sites in their gums and from the crypts of both tonsils. The husband was negative, except for a dead tooth and a partially erupted wisdom tooth, which were immediately extracted. The wife was still positive both in the mouth and in the right tonsil.

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Clinical Memoranda

Perforation of the Intestine

We submit details of two cases of bowel perforation, both of rare causation, which we hope may prove of interest. The cases occurred in the same practice almost simultaneously. The cause of the perforation in the first case was a stercoral ulcer of the sigmoid colon, whereas in the second the perforation occurred in the small intestine, and was due to endarteritis of the neighbouring blood vessels.

Case 1.—A man aged 62 came under the care of one of us (E. C.) in October, 1934. He had been perfectly healthy till the beginning of September, when he began to complain of increasing difficulty in getting his bowels to move. Previous to this date the bowel action had been perfectly regular. There was also loss of appetite and general weakness; and he said he had lost 2 st. in weight. An abdominal examination revealed nothing of significance, and as a colonic growth was suspected he was placed on the waiting list of the Newcastle Royal Infirmary to have a barium enema investigation made.

By the middle of January, 1935, the clinical picture became more complicated. In addition to the above symptoms becoming more severe there was now marked dizziness, and the patient was so weak he was unable to stand without support. There was also numbness of the lower limbs of the trunk, up to the waist, and of the hands. By January 22nd he was bed-ridden. Pallor and emaciation were marked. The knee-jerks and the ankle-jerks were sluggish. Babinski's sign was negative. The pupils reacted to light and accommodation. He was admitted to hospital on January 23rd as a possible case of subacute combined degeneration of the cord, and was given campolon. A blood film showed no evidence of pernicious anaemia. The Wassermann reaction was negative. The cerebro-spinal fluid revealed nothing of significance. The only abnormality in the gastric juice was the presence of some occult blood.

By February 19th the clinical picture predominant was that of peripheral neuritis. The arms were wasted and there was considerable loss of power. They could be raised horizontally only with extreme difficulty. Wrist-drop was present. The wasting of the legs was not so marked as in the arms; loss of power was as great. Foot-drop was present. No fibrillary twitching could be detected. Anaesthesia, except for small patches, was almost generalized in trunk and limbs. Vibration sense and the sense of position were absent in all the limbs. The patient's condition showed continued deterioration, and he died on March 5th, after developing sudden signs and symptoms of peritonitis.

Post-mortem Findings.—Gas and free fluid were present on opening the abdomen. Peritonitis was evident. The stomach was small and contracted, and no evidences of ulceration were present. ? Malignant ulcer of the pylorus was present. The intestines were healthy till the sigmoid colon was reached, when there was found a large faecal ulcer, which had perforated. Two small ulcers were present on part of the perforation. The spinal cord was apparently healthy. The anatomical diagnosis was perforation of stercoral ulcer with peritonitis.

Case 2.—A man aged 67 was first seen by one of us (A. B. S.) on April 9th, 1935. He had complained of intermittent abdominal pain for fourteen days previously, with attacks of vomiting. Pain was now present in the right iliac fossa. The patient looked obviously ill: temperature 99.2° F., pulse 90.

Examination of the abdomen revealed tenderness and some rigidity over the appendix. There was a doubtful mass in the right iliac fossa. He was sent into hospital as a case of appendicitis with probable abscess. At the operation quantities of purulent fluid were found in the peritoneal cavity. Two perforations were observed in the lower end of the small intestine. The neighbouring bowel was covered with purulent lymph and was almost gangrenous. About twelve inches of small gut were resected and an end-to-end anastomosis performed. Soon after the operation the patient showed signs of post-operative shock and he died on April 11th.

Pathological Report.—"This appears to be a simple acute ulcerative condition with no evidences of tuberculosis. It is possibly secondary to vascular obstruction, as there is evidence of endarteritis and thrombosis with organization in some of the vessels of the subperitoneal coat."

COMMENTARY

Case 1.—The complete clinical picture presented by this case was complicated and involved. The initial symptoms were presumably due to the local condition. Then these became overshadowed by the evidences of what proved to be peripheral neuritis, which in turn gave way to the terminal signs and symptoms of peritonitis. Furthermore, perforation of a simple stercoral ulcer of the colon is a comparatively rare condition, a review of the literature by Barron revealing fifty-three cases.

Case 2.—A search of the literature has failed to reveal the publication of a similar case of gangrene and perforation of the small intestine possibly due to endarteritis and thrombosis. Cases have been published where the gangrene and perforation have been due to embolism of the inferior mesenteric artery. One case has been reported by Friedman (*Nov. Chir. Arch.*, 1931, xxii, 354) of perforation of the small intestine, which was found to be due, however, to periarteritis nodosa.

We beg to thank Dr. T. C. Hunter and Professor R. J. Willan, under whose care respectively the patients were placed in the Royal Victoria Infirmary, Newcastle, for permission to make use of the "follow-up" hospital records for the purpose of our report. We also wish to acknowledge our thanks to Mr. T. John Shields of the B.M.A. Library for the references to the literature.

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Rupture of the Aorta as a Cause of Sudden Death

Ruptured heart is known to be a not uncommon cause of sudden death. Ruptured aorta, unaccompanied by spirochaetal cardiovascular changes, is not so often encountered. The following three cases were brought to the Metropolitan Hospital within a week. All three were taken ill in the street and were dead when they reached hospital.

Case 1 (February 10th, 1936).—Female, aged ?65. *Post-mortem findings:* The aorta was atheromatous. One inch above the aortic valves there was a transverse tear half an inch long in the inner coats of the aorta. Blood had dissected the adventitia off the media down to the base of the aorta and round the base of the pulmonary artery. Externally the first part of the aorta was blackened, and at one point rupture had occurred into the pericardium, which was filled with blood clot. There were no signs of syphilis in this case.

Case 2 (February 11th, 1936).—Female, aged 76. *Post-mortem findings:* There was a fusiform aneurysm of the arch and descending part of the aorta. In the distal part of the aneurysm there was a rupture two inches long, through which blood had escaped into the left pleural cavity, which was filled with blood clot that surrounded the oesophagus. This case probably was syphilitic.

Case 3 (February 17th, 1936).—Female, aged 76. *Post-mortem findings:* The aorta was atheromatous. One and a half inches above the aortic valves there was a transverse tear one inch in length. Blood had dissected the adventitia off the media down to the base of the aorta, where perforation had taken place. The pericardial cavity was full of blood clot. There were no signs of syphilis in this case.

The post-mortem findings in the first and third cases were almost identical, except that in the first the blood had dissected round and stripped the outer coat off the pulmonary artery at its base. An interesting fact noted was the extremely clear-cut character of the rupture in all three cases, the aperture in each of them resembling a scalpel wound.

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Reviews

PHYSIOLOGICAL ASPECTS OF FLYING

Physiologie des Menschen im Flugzeug,[1] by Dr. GUSTAV SCHUBERT, privatdozent in the German University of Prague, surveys in some two hundred pages the advances made during the last five or ten years in the application of physiology to flying. The first part is devoted to general considerations, with chapters on respiration, circulation, senses, and central nervous system. The second part deals with the problems of high altitudes, here defined as anything over 12,000 feet. The formidable list of literary references appended to each chapter illustrates the amount of work carried out on this subject in the past few years.

A good proportion of space covers familiar ground, and may be most appreciated by those approaching this branch of physiology for the first time. The more advanced student will find instructive reading in the detailed analysis of the effects of acceleration and centrifugal force on the circulation. The findings of Orlebar and Stainforth in the Schneider Trophy are quoted. Without casting any reflection on the excellent physique of the modern pilot, the limits of human endurance given by Dr. Schubert suggest that designers of ultra-performance aircraft could well afford to rest on their laurels until the physiologist can find the best way of adapting the human being to the tasks demanded of him. This applies to an even greater extent at high altitudes.

Gas exchanges at great heights are carefully discussed so far as the present state of our knowledge permits. Further experimental work is necessary, and can only proceed along two lines: either in the reduced pressure chamber, which must simulate ascent to high altitudes in greater detail than it does at present, or in the aeroplane itself. The difficulties of each method are self-evident, but not insurmountable. Present theories of the function of the semicircular canals are criticized, and some revision is indicated.

The author claims that this monograph is no more than a review of the position as it stands to-day; and, as such, a translation into English should certainly be well received by those concerned with the medical aspects of flight.

URGENT SURGERY

Within a few years of publication a second edition of *Emergency Surgery*,[2] by HAMILTON BAILEY, has appeared. The original edition came out in two volumes, but the new edition is one volume containing 842 pages. The text has been thoroughly revised and some sections have been rewritten. The aim of the author has been to provide a manual to which the surgical practitioner can turn when he must deal with an acute emergency. Based on the author's own wide practical experience and founded on the teaching of different surgical centres the contents of this book are widely comprehensive in character and cover the whole field of urgent surgery. The chapters on the nose, nasopharynx, and nasal sinuses, the pharynx, the external ear, acute mastoiditis and its complications, and intracranial suppuration have been contributed by Mr. E. Watson Williams; those dealing with the eye and the orbit by Mr. Humphrey Neame. Almost every conceivable emergency has been visualized. The sections on compound fractures, lacerations and infections of the hand, and burns will be found of particular interest to readers engaged in general practice. Those who extend their activities to the sphere of operating will find all they want to know about acute abdominal emergencies, strangulated hernias, and the other sudden catastrophes to which human flesh may be subject. Some useful tips are given as to how, when, and where to drain the peritoneal cavity, a difficult problem which most surgeons have to work out for themselves.

The contributors leave no room for doubt as to the best line of treatment to adopt and the best methods to apply. The book is excellently printed on very good paper and the illustrations are superb. The publishers deserve full credit for their share in the production of a really excellent book. There is a complete index, a detail which in not a few scientific works is too often overlooked. Mr. Hamilton Bailey has just cause to be proud of this volume, which can claim to be equal and in many ways superior to any book on the subject published hitherto. He has dedicated it to his masters in London, Liverpool, and elsewhere, and its high standard of excellence is a compliment to them as well as to himself.

POISONS LAW

Mr. HUGH N. LINSTEAD in *Poisons Law*[3] has made a valiant attempt to set out in simple language the laws which control the practice of pharmacy and the handling of poisons by those who make, sell, buy, or use them. The historical approach explains—surely nothing can justify—the very great complexity of the subject, and leads naturally to the story of the unique development of the Pharmaceutical Society into "a corporation completely representative of the profession, with power to impose its own educational standards for admission, to regulate its own internal affairs, and to exercise, subject to the oversight of the High Court, its own disciplinary control over those admitted into its ranks."

The sections of the Pharmacy and Poisons Act, 1933, relating to the sale of poisons, and also the Poisons Rules, came into operation on May 1st, 1936. The author has effectively dealt with this part of his subject by grouping those who handle poisons into: (1) retail chemists; (2) retail dealers who are not chemists; (3) educational institutions and laboratories; (4) manufacturers and wholesalers; (5) medical practitioners, dentists, and veterinary surgeons; (6) hospital authorities; and (7) manufacturers of animal medicines, and then by considering the obligations which are now laid upon the members of each group. Thus, for example, in the case of medical practitioners, some of the special obligations and restrictions are as follows. When poisons in the First Schedule are required a written order must be supplied, or, in emergency, there must be an undertaking to give such written order within twenty-four hours; samples of poisons in the First Schedule may be sent only if asked for in writing; records must be kept of medicines containing poisons included in the First Schedule; labelling with the name and address of the practitioner is compulsory if a medicine contains a poison, and special labelling is required for liniments containing poisons; and certain substances named in the Fourth Schedule—for example, barbiturates, amidopyrine, sulphonal, etc.—may be sold to the public by chemists only upon a prescription. In hospitals there are special requirements as to records and labelling where poisons are supplied to out-patients, and rules are laid down for storage in hospitals and similar institutions, the most important of which is that: "In every institution every substance included in

[1] *Physiologie des Menschen im Flugzeug*. By Gustav Schubert. Berlin: J. Springer. (Pp. 206; 27 figures. RM. 14.80; geb. RM. 16.20.)

[2] *Emergency Surgery*. By Hamilton Bailey, F.R.C.S. Second edition. Bristol: J. Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1936. (Pp. 842; 812 figures. 50s. net.)

[3] *Poisons Law*. A Guide to the Provisions of the Pharmacy and Poisons Acts, 1852 to 1933, and the Dangerous Drugs Acts, 1920 to 1932, for the Use of Pharmacists and Others Concerned with Transactions in Drugs and Poisons. By Hugh N. Linstead, Secretary, Pharmaceutical Society of Great Britain. London: The Pharmaceutical Press. 1936. (Pp. 444. 5s. net.)

the First Schedule to these Rules which is stored in the wards must be stored in a cupboard reserved solely for the storage of poisons and poisonous substances."

An interesting chapter on "The International Background to the Dangerous Drugs Acts," by Sir Malcolm Delevingne, traces their origin to three international conventions. The Dangerous Drugs Acts themselves and the various Regulations are carefully explained in a final chapter. Appendix I, of 175 pages, contains, *inter alia*, the complete texts of such parts of the Statutes and Statutory Rules relating to pharmacy and poisons as are now in force. Appendix II is a list of more than 1,200 poisons and substances containing poisons, with an indication of the special restrictions applying to each.

Mr. Linstead's book is indispensable to the pharmacist; it may well find its place with the *B.P.* and the *Codex* and Martindale on the dispensing counter. Dispensing doctors perplexed by the questions of purchase, storage, labelling, and recording of poisons will find this an invaluable book of reference, while the prescribing doctor will appreciate its use in discovering the poisons which can be sold only on a medical prescription and the exact form which such a prescription must take.

LIFE ASSURANCE MEDICINE

The *Transactions* of the International Congress on Life Assurance Medicine, which was held in London last July, makes a bulky volume of more than 600 pages.[4] The opening papers are reproduced either in English, French, German, or Italian, and a synopsis is given in each of the other three languages, but further contributions to the discussions appear, without translation, in the language in which they were made. Some of the opening papers, notably those on "Methods of Estimating Risks," by Dr. Josef Sturm of Munich, and on "The Prognosis of Hypertension," by Drs. Etienne May and Jean Ollivier of Paris, and by Professor Leopold Winternitz of Trieste, are in themselves considerable treatises. It strikes us in this, as in other international congresses, that English-speaking "rapporteurs" are either more concise or less exhaustive in their treatment of a subject than are their Continental brethren. In addition to the two subjects named there were discussions on "The Acceptance of Glycosurics" and on "Gastro-duodenal Ulceration and Life Assurance." The final discussion was on the relation of life assurance and health services—by which are meant preventive and social services—a subject much canvassed in the United States, where the idea is said to have originated more than a quarter of a century ago, though it is true that as far back as the sixties of last century a London medical man, Henry Dobell, mooted the idea of periodical health examinations. Sir Walter Langdon-Brown, the president of the congress, said in his closing speech that in England we had lagged behind in this matter; and that is rather borne out by the report of the discussion itself, in which speakers from America, North and South, and from seven European countries participated, but no British representative addressed the congress.

In addition to the set discussions a dozen independent papers are included, and it is difficult to think of a phase of life assurance medicine which was not dealt with during the three busy days of the meeting. A skeleton account of what took place was given in our issue of August 10th last (p. 272), but here is the flesh that clothes the skeleton, and very solid flesh at that. Dr. Otto May, who acted as secretary of the congress and as editor of the *Transactions*, is to be congratulated on the result of his efforts in both capacities.

[4] *Transactions of the International Congress on Life Assurance Medicine.* London. 1935. Edited by Otto May, M.D. (Pp. 623.)

DERMATOLOGY AND SYPHILOLOGY IN 1935

The Year Book of Dermatology and Syphilology,[5] periodically brought out by Dr. WISE and Dr. SULZBERGER, is always interesting. In addition to a précis of principal original contributions brought before the dermatological world during the year under review, they preface the volume with one or two articles on special subjects. On this occasion they give detailed directions for the treatment of eczema on modern lines, especially for the benefit of the general practitioner. This article is sound and practical, and the final paragraph of it is particularly worthy of emphasis—namely, that for the treatment of this disease a few basic prescriptions should be relied upon, but that no trouble should be spared in giving the patient, and his or her attendants, the fullest and most precise instructions for their employment. The other special articles are on mycotic infections and on allergy and immunology, both subjects which are being very actively studied at the present time. One article of general interest may be mentioned: the study which has been made in America as to the relation of syphilis to life insurance. There is no doubt that this disease greatly increases the risk, but it is often undetected by the medical examiners of insurance companies. Of 500,000 policies issued by one company fewer than 2,000 of the insured persons were known to be syphilitic, although according to reliable statistics at least 10,000 should have been. Rein and Le Moine of New York have produced a precipitation test for syphilis much simpler than the usual Wassermann reaction, and if this proves to be reliable it will be found extremely useful by the insurance companies.

A great deal of interesting information is to be found in this volume, which is well worth reading by all concerned with dermatology and allied subjects.

A TRANSPARENT ATLAS OF ANATOMY

A good atlas of the anatomy of the human body is of great value. The student needs one to refresh his memory of his dissections and to fix them on his mind; and the practitioner must consult one when he realizes that there is a blind spot in his recollection of the relation of the deeper structures to some seat of pain in a patient. There have been many such atlases. Some, such as Ellis's large plates and Gordon Brodie's smaller sheets, were examples of the art of the anatomical painter and the lithographer. Now in fourteen sections of the *Synthetic Anatomy*[6] of Dr. J. E. CHEESMAN there is to be found a presentation of the anatomy of the body which is as nearly a representation of a thorough dissection of a part as can well be made. The latest and final section is that devoted to the eye and orbit. Each section includes a dozen sheets measuring 8½ by 7½ inches. The sheets are of tough transparent paper; upon these are printed the line and colour drawings of the part dissected. Each of the twelve sheets is printed in correct alignment, so that by turning the sheets one can see the dissection of layer after layer exposed to the eye. Every layer can be examined either separately or in relation to the others beneath it.

The idea is an excellent one, and it has been carried out well. Some parts of the body, such as the limbs, lend themselves readily to this form of representation; others, such as this latest section of the eye and orbit, are much more difficult, yet even here the author has

[5] *The 1935 Year Book of Dermatology and Syphilology.* Edited by Fred Wise, M.D., and Marion B. Sulzberger, M.D. Chicago: Year Book Publishers; London: H. K. Lewis and Co., Ltd. 1936. (Pp. 736; 89 figures. 3 dollars, or 12s. 6d., postage 6d.)

[6] *Baillière's Synthetic Anatomy.* By J. E. Cheesman. London: Baillière, Tindall and Cox. 1936. (Complete in fourteen parts, price 3s. each.)

succeeded in giving clear and magnified views of the planes of the orbit from the external canthus to the nasal bones. There is a foreword to the series by Professor J. Ernest Frazer of London University, who acknowledges the good work of his one-time pupil Dr. Cheesman.

Notes on Books

We must congratulate Dr. and Mrs. PLIMMER on the fact that their book *Food, Health, Vitamins* has reached its seventh edition.[7] This work provides an account of modern knowledge of vitamins in terms understandable by the lay public and at the same time maintains a high standard of accuracy. The Medical Research Council, in its current report, points out that the advances in recent years in the science of dietetics are not being utilized by the general public, and that an important and urgent problem in public health is how to ensure that use is made of knowledge already established. The volume under review should be of service in this respect, since it presents the established facts with remarkable clearness. The authors very wisely have not allowed their book to expand in successive editions, and hence it is still of a convenient size. Examination shows that it has been carefully revised, and contains an adequate account of the many important advances that have recently been made in the chemistry of vitamins.

Professor C. OPPENHEIMER is advancing steadily in the task of producing the Supplement to his great encyclopaedia Ferments and their Action.[8] Part III, which has just appeared, deals entirely with the carbohydrases, and the major portion is occupied by an account of the properties of amylase. The fermentative breakdown of starch to sugar is one of the most important basic processes in animal nutrition, and also is of great importance in industry. Even so, the fact that more than 150 pages are needed for a summary of the work done on this subject since 1925 is somewhat surprising, and gives an indication of the extent of modern ferment literature.

[7] *Food, Health, Vitamins.* By R. H. A. Plimmer, D.Sc., and Violet G. Plimmer. Seventh edition. London: Longmans, Green and Co. 1936. (Pp. 178; 12 figures. 3s. 6d.)

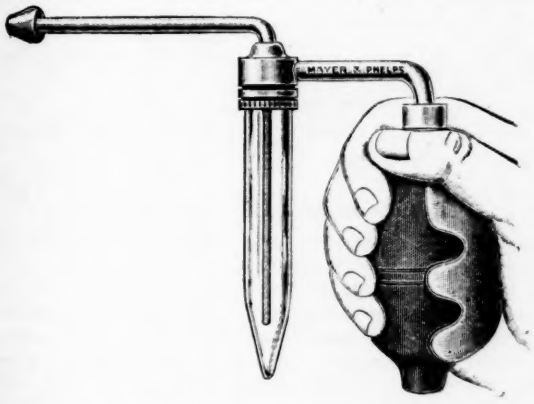
[8] *Die Fermente und ihre Wirkungen. Supplement. Part III.* By Professor Carl Oppenheimer. The Hague: W. Junk. 1936. (£1 8s.)

Preparations and Appliances

A NASAL SPRAY

Dr. M. O. ABDEEN, oto-laryngologist, Government Hospital, Alexandria, Egypt, writes:

The accompanying illustration represents a spray I have designed. Its advantages over others are: (1) it can be



used with one hand while the other is free either to open the nose or press the tongue; (2) the bottle is pointed so that the last drop of solution can be used; (3) the tip of the spray is changeable, so that it can be boiled after use. It has been made for me by Messrs. Mayer and Phelps, 59-61, New Cavendish Street, London, W.1.

MODIFIED MADDOX WING TEST

Dr. D. L. CHARTERS (Birkenhead) writes:

The standard model of this instrument is made with a fixed eye-piece, which is provided with the usual cells for lenses. There is in this arrangement a fixed pupil distance, and when strong lenses are in use considerable prismatic deviation may be set up where the patient's pupil distance does not correspond to that of the instrument. I have therefore

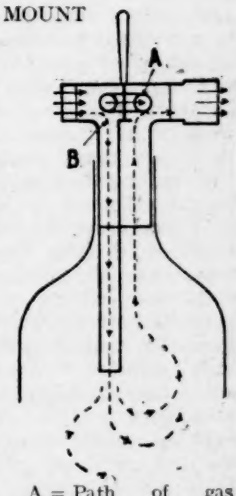
had made a model in which the pupil distance is variable and measurable. In practice I would suggest taking the ordinary pupil distance first; the instrument's pupil distance is then set at 3 to 6 mm. less than this, to allow for reading convergence; the test is carried out in the usual way, but reading lenses can be added without prismatic deviation being set up, and we can therefore get a more accurate measurement of any exophoria or esophoria.

The instrument is illustrated above—and explains itself. The scale is marked in millimetres, and reads from the bridge outwards on each side. It has been made for me by Messrs. Rayner, 100, New Bond Street, London, W.1.

REBREATHING BAG MOUNT

Dr. H. J. BRENNAN (Manchester) writes:

Many anaesthetists are using an arrangement of Boyle's or Webber's bottles, a thin rebreathing bag being mounted on the apparatus and the gases being delivered through a length of unkinkable tubing. With such a machine considerable care is sometimes necessary when adding or increasing ether vapour to avoid some resistance or gagging on the part of the patient. To overcome this difficulty Messrs. Chas. King have made a bag mount for me which enables the anaesthetist either to send the gases straight at the patient in the normal way or to make them first pass through the bag. When the latter route is chosen the ether is diluted, and its percentage so gradually increased that resistance on the part of the patient is minimized. The sketch illustrates the working of the bag-mount, which I have found of considerable value.



A = Path of gas for "straight through" working.
B = Path of gas for working through bag.

SCIENTIFIC TREATMENT OF DELINQUENCY

BY

EMANUEL MILLER, M.A., M.R.C.S., D.P.M.

CO-DIRECTOR, INSTITUTE FOR SCIENTIFIC TREATMENT OF DELINQUENCY; PSYCHIATRIST, WEST END HOSPITAL FOR NERVOUS DISEASES; PHYSICIAN, INSTITUTE OF MEDICAL PSYCHOLOGY

SCOPE AND PURPOSE OF THE INSTITUTE

The importance of the medico-psychological approach to the study and treatment of delinquency is most clearly illustrated in the observation and treatment of the disorders of the child and the adolescent. The importance of this approach is twofold, inasmuch as it has led in the first place to many cures of juvenile delinquency, and in the second place, following from the first, it acts, or may act, prophylactically in diminishing the incidence of adult crime, for it has been found that adult criminals have been either delinquents in childhood or victims of ill-defined neurotic disorders. In fact, those who have studied closely the lives of adult criminals have found that in early childhood or in adolescence such persons presented the same psychological picture as juvenile delinquents do when their social and psychological states have been investigated.

The remarks that follow, which are arguments in favour of the psychological, medical, and social treatment of juvenile delinquency, are based upon personal experience of child and adolescent neurosis and delinquency gleaned in two clinics organized for this purpose and from treatment at the Institute for Scientific Treatment of Delinquency, and I should like to add that the larger number of the cases of delinquency were gathered from juvenile courts over a space of eight years, particularly from the children's court presided over by the late Sir William Clarke Hall, and latterly from other courts.

The Juvenile Delinquent

Observation of the procedure in the juvenile court has brought home to many of us, as physicians and psychiatrists, that the cases charged belong to many causal categories. Even from the very superficial data available to the court we have found that the causes of disordered behaviour and delinquency lay in various degrees and forms of ill-health, bad social conditions such as housing, overcrowding, and poor sanitation, locales of low moral level, broken families, and other broad social considerations. Amongst other causes which one regarded as more psychological than the above were the consequences of illegitimacy, drunkenness, and family disruption. Here again such apparently causal agencies could be attributed to some deeper causes, and these could only be estimated after careful investigation of family histories and the relationship of members of a family to one another. But over and above these determining conditions it is demonstrated from clinical experience that there are many cases which could only be elucidated by handling the individual child, with its personal psychological problems.

While the physician voluntarily attached to a juvenile court could, from time to time, make *ad hoc* suggestions to the magistrate as to the proper disposal of cases—that is to say, choice of a home or school suited to the particular temperament of a child as superficially or hurriedly gauged in the court—the physician is driven to the conclusion that real help in reclaiming such children could only be hoped for if time were given for the closer investigation of the child in its social setting and, moreover, as an individual with a personal problem of which the delinquent act may have been but one manifestation. It is true that many cases charged with behaviour disorders and delinquency do not call for serious investigation; sometimes charges are exaggerated; parents alone may be at fault, and police officers unwisely shocked by behaviour which they would have condoned in their own children or in themselves when they were young. Such human interpretation of the occasion for delinquency and a charge may well be left, in a large number of cases, to the discretion of an understanding magistrate moved by compassion and a sense of humour.

Value of Clinics: Illustrative Cases

The value of these clinics lies in the fact that each case is investigated from the medical, the psychological, and the sociological point of view. Illustrative cases are the best evidence of the way in which the modern scientific investigation of delinquency can discover causes, and assign remedies for the cure or alleviation of delinquency.

For example, a boy was brought to the clinic for intermittent stealing and unmanageable temper. It was found, on medical investigation alone, that the child was suffering from a profound disease of nutrition with sugar hunger and other deficiencies which called for immediate correction. When suitable remedies were adopted, not only did the child's general health improve, but the irritable temper disappeared, and as long as the metabolic disturbance was under control the delinquencies did not occur.

In another boy, whose temper and bestial behaviour had reached such a pitch that the mother decided to charge him as being beyond control, the medical examination revealed an organic disease of the nervous system taking the form of a meningeal growth of naevoid form. In consequence of this discovery, the child has been disposed of, and has therefore been saved from segregation in an approved school, where he might have been handled as a delinquent until the obscure disorder was discovered.

A boy, aged 10, showed delinquent behaviour only when the family moved into a certain district notorious for its low morale. He was found to be intellectually retarded, but not defective in the statutory sense. The boy's record had been good before entering this district. As a result of these discoveries, we have been able to arrange for the family to move to a more stable *milieu*, and we have arranged for the boy's transfer to a school where his retarded intelligence can be dealt with on adequate educational lines. No further complaints have been brought against this lad since these changes have been achieved.

A boy, aged 11, had been adopted as the result of the death of his parents. He has since been guilty of stealing and of a variety of depraved practices. The foster-parents have, to all intents and purposes, dealt kindly with the lad, and one was obliged to conclude that the disordered behaviour was due to the child's mental attitude. He has been under prolonged individual psychological attention, with the result that many mental conflicts in his young mind have been cleared up and the disordered behaviour resulting from such mental disorder has diminished very appreciably.

These are but a few illustrations of the salvage work that can be carried out if juvenile delinquency is treated scientifically, making clear the causes—whether they be medical, psychological, or social—and dealing with them with the instruments at our disposal.

Of special interest has been the scientific treatment of the disorders of puberty and adolescence. This period is biologically a phase of storm and stress, during which many children are on the borderline of nervous breakdown or delinquency. It is essential that where conditions such as these have physiological as well as psychological causes, they should not be treated summarily by punitive measures, and even where the gravity of the disorder may call for segregation in the interests of society, during such period of segregation every effort should be made to use a more benevolent, and incidently a more scientific, method of treating them.

Results of Scientific Treatment

Actual figures are perhaps the best means of graphically describing the value of treatment. In the course of two years at one clinic alone forty cases were referred from children's courts or from probation officers themselves. Had these cases not been referred to us one can estimate that thirty of them at least would ultimately have been admitted to approved schools, and it would be impossible to say what would have been the outcome of such form of treatment. Actually, however, only six cases out of the forty eventually entered approved schools. Treatment failed either because the child failed to co-operate and therefore broke his probation, or not sufficient time and latitude was allowed us to carry on with the case.

The rest of these cases have remained more or less well and free from disorder. Some of them have been under continuous observation for a space of from two to two and a half years. This may seem a long time, but it is really a short period compared with the time spent at an industrial school, with a doubtful outcome at the end of the period. In many of these cases their whole demeanour has changed, and one has reason to believe that in some of them delinquent tendencies have been radically dealt with. At all events in all cases prolonged aftercare is maintained to study the psychological and social progress of each child in order finally to estimate the value of treatment.

Recoveries have been most striking in those cases that have been observed in and around puberty, for it has been discovered that in this period of stress the abnormal processes of mind and body are brought into relief, and psychological handling in most cases, and purely medical attention in a few others, have prevented the development of major disorders. There are some cases belonging to this period which have been followed up into early manhood and womanhood, and we have thus been able to see a delinquent tendency in the making, in action, and in the process of recovery.

The Established Delinquent

What is true of children and adolescents is true, if in a less degree, of adults of both sexes. While most psychologists and social workers realize that the established delinquent is not easy to handle, to keep to treatment, and to be economically and socially assisted, treatment has proved helpful and curative in many cases. An all too large number of delinquents have made of crime a profession and therefore a means of living—if of living dangerously, an emotional incentive to crime which cannot be wholly ignored. These are the difficult cases and society must be protected from them, as it protects itself against small-pox by isolation. But the delinquents who realize that there is something wrong with them, or can be persuaded that freedom can be bought honourably by the quest for treatment honestly persevered in, these can and should be treated on the same lines as are the neuroses and borderline psychotics. In fact the records of the Institute for the Scientific Treatment of Delinquency show that the majority of delinquents referred suffer from anxiety symptoms, obsessional neuroses, compulsive thinking, which are closely related causally to the delinquency itself.

Work of the Institute

The Institute, which has now been working for three years, has a voluntary staff of four consultants and thirty psychotherapists with impeccable credentials and practical experience, who give consultations at the West End Hospital for Nervous Diseases to delinquents who present themselves voluntarily or who are referred by magistrates, judges, or probation officers. A social worker is now engaged who explores the social background of cases, and, where possible, social and economic stresses are relieved with the hope of diminishing the incentive to crime. Experience at the Institute and elsewhere proves that the intimate psychology of most delinquents is at fault, from character anomalies to psychosis, and each case deserves close investigation as a personal problem of body, mind, and social adaptation.

The Institute realizes that its work, while already productive of results, is experimental. It recognizes the value of research in every soil from which crime presumably springs: psychopathology and psychiatry, sociology and economics, and anthropology.

For the ventilation of divergent views, and for the publication of researches, clinical and statistical, the Institute will shortly publish a scientific journal in which articles by distinguished workers and thinkers in many fields will appear. For some time it has embarked on educational work, and seminars for probation officers and social workers have been given. It is for medical men generally to give this work their close and sympathetic attention.

INTERNATIONAL HOSPITAL ASSOCIATION

THE UNITED KINGDOM COUNCIL

To give the International Hospital Association a live, representative character in this country, a national council has been set up. This council, "The United Kingdom Council of the International Hospital Association," includes three representatives of every association interested nationally in any aspect of hospital service. Associate members, of whom there is a growing body in Great Britain, will also be represented. It is believed that an active council can do much to further the aims of the international organization, creating interest in its work and stressing its value to the public. Within the United Kingdom Council it can serve as a central unit, knitting together the separate hospital interests and forming a national bond between hospital associations, administrations, and others interested in the welfare and development of hospitals. The existence of a central organization provides facilities for the pooling of information and for the canalizing of policy and ideas in regard to affairs dealt with by the International Hospital Association.

The collection and publication of data in the different countries bearing upon various aspects of medicine, surgery, and hospital organization, plans of building, etc., need the establishment of an international bureau, and here the National Council can give much help. It can also make valuable contributions to the affairs of the International Hospital Association by its participation in the congresses, hospital study tours, and permanent study committees. Among the bodies that have expressed their desire to become members may be mentioned: the British Medical Association, the British Hospitals Association, the British Hospitals Contributory Schemes Association, the College of Nursing, the Royal Institute of British Architects, the Incorporated Association of Hospital Officers, the National Association of Local Government Officers, and the Pharmaceutical Society.

The council has been fortunate in the services it has received from individuals. To mention a few: Sir Harold Pink, chairman of council of the British Hospitals Association, Mr. R. H. P. Orde, honorary secretary of the British Hospitals Association, Mr. C. E. Elcock of the Royal Institute of British Architects, and Dr. Peter Macdonald, chairman of the Hospitals Committee of the British Medical Association, have been warm supporters of the council from the first.

Study Tour in Czechoslovakia

A hospital study tour, organized by the International Hospital Association and the Association of Czechoslovakian Hospitals, will take place from August 29th to September 15th, and should be of great interest to all connected with hospital work and organization.

The tour is divided into two parts: Part I, from August 29th to September 6th, will be a post-graduate course of lectures and visits; Part II, from September 6th to 14th, will be a study tour of the sanatoria of the High Tatra Mountains. Among the towns to be visited in the first part of the course are Carlsbad, Prague, Zlin, Brunn, and Moravská Ostrava. Visits of inspection will be paid to the Government Health Institute in Prague, the Masaryk Home in Krc, the Bata Hospital and Social Welfare Institution in Zlin, and the tuberculosis department of the Municipal Hospital of Bulovka. Lectures, to be given in the histological institute of the Charles University, Prague, will deal, among other subjects, with tuberculosis, rheumatism, mental and nervous complaints, carcinoma, diseases of the heart and circulation, and diseases of old age.

Comfortable travelling facilities by train and car are being provided, and suitable hotel accommodation has been arranged. Particulars of the tour and fares at party rates may be obtained from the Czechoslovakian Travel Bureau (Cedok), Ltd., 21, Regent Street, London, S.W.1, or from Thos. Cook and Sons, Ltd.

British Medical Journal

SATURDAY, MAY 30th, 1936

PRESENT POSITION OF TREATMENT WITH BACTERIOPHAGE

Among modern innovations in therapeutics treatment with bacteriophage offers singular opportunities to the purveyor of doubtful remedies. It can be produced cheaply, has for the present the diminishing asset of novelty, and is credited with an action which captivates the imagination. It is perhaps time that we should consider what the truth about this method of treatment really is, and any serious inquirer will find much of what he needs to know in a series of papers published more than eighteen months ago by Eaton and Bayne-Jones,[1] who were commissioned by the American Medical Association to review and report on the literature of this subject. Several important conclusions were reached by these authors which are unfavourable to bacteriophage treatment as it is largely practised to-day.

It has been proved repeatedly that bacteriophage is inactive in the presence of blood or serum. This fact, in the absence of any rebutting evidence, appears to dispose at once of any possibility of employing it usefully by any method of parenteral injection. Its activity, when not abolished, diminishes in varying degrees in the presence of all other body fluids when tested *in vitro*. A second theoretical objection of the first importance is that its action *in vivo* cannot be distinguished from that of a sort of vaccine, which any bacteriophage preparation necessarily is. It must contain, among other things, the constituents of lysed bacteria, and these may well immunize if injected into tissues, or may even, if there is anything at all in Besredka's idea of local immunity, have some effect when merely applied to a surface. A favourable result may in fact illustrate the truth as enunciated by d'Herelle or by Besredka, but certainly not both, and possibly neither. Another serious flaw in the case for bacteriophage as a therapeutic weapon is the insufficiency of experimental evidence for its activity: well-controlled animal experiments on an adequate scale should be capable of illustrating its therapeutic capacity, and such experiments have usually yielded disappointing or completely negative results. Clinical evidence, though admittedly the final court of judgement in all such matters, is voluminous and confusing, and often so coloured by the enthusiasm of its authors as to be of doubtful evidential value. It is the belief of Eaton and Bayne-Jones that the case in favour of bacteriophage treatment has been made out only for local staphylococcal infections and "perhaps" for cystitis: this judgement may perhaps err on the side of severity.

If subsequent reports are studied in the light of these conclusions they appear to fall into two categories. In one the methods used are such as to be theoretically capable of success, adequate numbers of cases are treated and studied with care, and conclusions are drawn judicially. Wehrbein,[2] for example, has obtained success in infections of the urinary tract by the local instillation of bacteriophage chosen for its capacity to lyse the organism causing the infection; he declares emphatically that only the introduction of bacteriophage into the urinary tract can secure its lytic action; subcutaneous injection only produces a "vaccine effect." Another careful study is that of Pasricha, de Monte, and O'Flynn,[3] who treated 684 cases of cholera with specially prepared choleraphage and 685 (alternate) cases without it: there was a significant difference in mortality, which becomes even more marked when only those cases are reckoned in which agglutinable vibrios were isolated. On the other hand, a report such as that of MacNeal and Frisbee[4] is by no means so convincing. These authors treated with bacteriophage 100 cases of staphylococcal septicaemia, most of which they themselves never saw; the preparation was given intravenously in large and increasing doses at intervals of two hours until "shock" was produced. Here interpretation is most obviously complicated by the possibility of effects quite other than that of bacterial lysis, and the achievement of "reducing" the mortality of this disease to 75 per cent., when allowance has been made for possible errors in bacteriological diagnosis, is hardly striking. These authors have previously[5] advocated bacteriophage treatment for urinary infections, septicaemia, and colitis by methods some of which are not calculated to attain any lytic effect. Stock preparations were used in these studies without as a rule any attempt to ascertain whether they would lyse the infecting organism, and the same objection applies to the work of Pretty,[6] who claims success from infiltrating the periphery of carbuncles with a commercial bacteriophage preparation. He goes on to recommend that in general furunculosis 2 c.cm. of this material should be swallowed in a wine-glass of Vichy water before breakfast, a proceeding which is said to give "excellent results." Why it should have any effect at all is past understanding.

The proper attitude towards this method of treatment in the present state of knowledge is one of scepticism. In particular its commercial exploitation is to be discouraged. Only carefully controlled studies are likely to bring us any nearer the truth, and for these one of the first requirements is that the bacteriophage employed shall be known to lyse the infecting organism, and this in the case of a commercial preparation cannot be assumed. When an advance in therapeutic technique must depend for its establishment on laboratory services which few investigators can command it is no doubt a misfortune, but that is unquestionably the position here.

[1] *Journ. Amer. Med. Assoc.*, 1934, ciii, 1769, 1847, 1934.

[2] *Amer. Journ. Surg.*, 1935, xxix, 48.

[3] *Indian Med. Gaz.*, 1936, lxxi, 61.

[4] *Amer. Journ. Med. Sci.*, 1936, cxci, 170, 179.

[5] *Arch. Surg.*, 1924, xxix, 633, 741, 748.

[6] *Canadian Med. Assoc. Journ.*, 1935, xxxii, 24.

THE HEALTH OF PRISONERS

The report of the Commissioners of Prisons for the year 1934[1] contains, as usual, a long and interesting section by Dr. Norwood East, the Medical Commissioner, recording the work done and progress made during the year on the medical side of prison administration. He remarks that courts of summary jurisdiction do not now sentence to imprisonment so many offenders who are known to be insane or mentally defective, and seldom ask to be supplied with a report on the mental condition of prisoners after conviction. They still fail too often, however, to provide the medical officer with information which might be useful to him in assessing the mental state of a remand prisoner. The Home Office has requested all courts to give this information, but only six have taken the special forms of information into use. Dr. East says that if this practice became general the mental examination would be expedited and a more confident opinion given to the justices.

Looking back over the years of the last reign, Dr. East notes the growth of specialization in prison medical practice. The treatment of many diseases has been affected by modern knowledge and research, and the incidence of certain diseases in prison has been modified. Chlorotic anaemia, formerly common among young women, is now hardly ever seen. The verminous heads which used to be so frequent are rare now that girls cut their hair short. Typhoid, tuberculosis, gout, hepatic cirrhosis, and the sequelae of alcoholism have much decreased. On the other hand, the amount of minor mental illness probably exceeds that of pre-war years, reflecting its general increase in the community at large. Social and educational improvements, as well as legal and medical measures, have raised the education and intelligence of the prison population. Discipline to-day is largely maintained by non-punitive measures, and nearly all the prisoners can adjust themselves without difficulty to the restraint. "Individualization" has been encouraged and applied, and has affected the attitude of the prisoner towards his punishment and his custodians. Prisoners, however, are remarkably conservative, and some of the older offenders prefer the narrow and rigid discipline of former times. Modern legislation has profoundly modified the material received into prison. The number of drunkards received has fallen to about a seventh of the figure in 1910. The Mental Deficiency Acts of 1913 and 1927 have cut off a considerable number of persons who used to return to prison repeatedly and were often unable to adjust themselves to prison life. Social legislation, providing unemployment and sickness insurance, better housing conditions, and the treatment on a national scale of tuberculosis and venereal disease, has considerably affected the medical problems of the prison. It is now uncommon for persons to commit petty offences in order to obtain its shelter.

The medical officer knows two broad groups of prisoners: the majority, who do not return to prison, and the minority, who acquire a criminal habit by paying less and less attention to the probable consequences of their acts. He is particularly concerned with those in the latter group who are mentally abnormal. There is, and will continue to be, a large group who cannot be brought within even the modern statutory definitions of mental defectiveness. The revision of these definitions seems to have had no effect on the number of defectives in prison. The legally defined forms of mental abnormality are often more easily ascertained than the mental conditions in this residuum of "subnormal inefficients." There is also a group of persons with minor mental disorders which tend to bring them back to prison; some of these may be amenable to psychological treatment. A psychotherapist was appointed to Wormwood Scrubs Prison two years ago; it is as yet too early to assess the value of the work, but experience is being gained in the treatment and also in the selection of cases. If the reform is to justify itself cases must be followed up after release so far as practicable, over-declarations of success must be ignored, and no respect should be paid to the heresy that moral and criminal offences are identical. The report contains much other matter of great interest. As a whole, it shows a steady and reassuring progress in the understanding of the prisoner and his physical and mental problems.

[1] London: H.M. Stationery Office. 1936. (Pp. 121. 2s. net.)

HEAD INJURY AND CHRONIC SUBDURAL HAEMATOMA

With the great increase in motor traffic during recent years head injuries and their sequels are met with more often than formerly, and, as might be expected, cases of chronic subdural haemorrhage are more common. In 1857 Virchow described what we now know to be chronic subdural haematoma as pachymeningitis haemorrhagica interna. He failed to associate this condition with head injury, and the first really accurate and enlightening description we have of it was given in 1914 by Wilfred Trotter, in a paper which appeared that year in the *British Journal of Surgery*. Trotter drew attention to the essential similarity between what Virchow had described as pachymeningitis haemorrhagica and the encapsulated subdural haematomas that form as a result of head injury. Commenting upon his paper in a recent contribution[1] on chronic subdural haematoma, L. T. Furlow of St. Louis states that, although very little of practical value has been added since, Trotter's contribution was generally overlooked and not much attention was paid to the condition until 1925, when a further paper appeared by Putnam and Cushing in the *Archives of Surgery* for September of that year. These authors conclude that there are in general two classes of subdural haematoma: the vascular type seen in patients who have died of chronic alcoholism or wasting diseases; and the traumatic type, with which surgeons

[1] *Arch. of Surg.*, April, 1936, p. 688.

are concerned. As this condition is more frequent than is commonly supposed, and its symptomatology vague, and as the head injury which produces it may be of a very minor character, it is important to bear it in mind in cases of head injury, since its early recognition and appropriate treatment may save the life of the sufferer or prevent his being certified as demented. Not infrequently the clinical features suggest the presence of an intracranial tumour, because signs of increasing intracranial pressure arise at some time after the injury which may not have been given much prominence in the history of the case or may have been overlooked entirely. One such case (not reported in the above articles) was that of a young miner operated upon some years ago with a tentative diagnosis of a left frontal tumour. The tumour turned out to be a chronic subdural haematoma. Three months earlier there had been a slight blow on the occiput. At the time of operation his vision was failing and he could count fingers with difficulty, but on the day after removal of the clot he could tell the time by the clock at the end of a long ward, and his recovery was rapid and complete. The most usual points in the history of these cases are headache—often intense—vomiting, drowsiness, diminishing visual acuity, and mental changes, occurring at some time after the head injury. Some degree of choking of the optic disks is nearly always present. Drowsiness in these cases is often greater towards evening and less in the early morning, a fact which may depend upon the diurnal variations in cerebro-spinal fluid pressure. It is well to be on the look out for the condition, and if doubt exists estimation of the pressure of the cerebro-spinal fluid and encephalography or ventriculography should be carried out to dispel this. It is as well to remember that the lesion may be bilateral and that the haematoma becomes encysted. Treatment consists in evacuating the haematoma either by means of osteoplastic craniotomy or by washing and suction through openings in the skull, and should be instituted as early as possible and preferably in the stage of drowsiness rather than later, when this has been replaced by coma. Furlow, in the article to which reference has been made, quotes the results in fourteen cases operated upon by Ernest Sachs and himself with four fatalities, and states, "when the diagnosis was made and the operation performed before the onset of coma there was a mortality rate of only 9 per cent., but if operation was delayed until after the onset of coma and symptoms of marked compression, the mortality rate was 100 per cent." Thus the importance of early recognition and treatment of the condition is obvious.

TUBERCULOSIS IN GERMANY

Germany's public health system is now being rebuilt to fit the pattern of her new political philosophy, and this interlocks to a considerable extent with her programme to combat tuberculosis. H. E. Kleinschmidt points out in the April number of the *American Review of Tuberculosis* that the population age-curve is not in Germany pyramidal in form, as it should be in a healthy nation, but has an urn-shaped outline, a relatively large group of middle-aged persons being supported by narrower bands of young persons and children. Should the present trend continue, Germany would disappear as a nation in a few centuries; hence the emphasis on race hygiene reflecting itself in public health in the so-called eugenics laws providing for sterilization of the biologically unfit and for an increased birth rate of acceptable racial stock by the encouragement in it of marriage and the rearing of children. With this goes economy of man-power. Public health is committed to the betterment of the racial stock, as interpreted by political leaders of to-day, and the equable distribution of social wealth, the achievement of which goal requires the control of medicine by the State, rigid organization of all resources, and the regimentation of all groups of society. Protection of the healthy is more emphasized than the healing of the sick, and radiology is in wide use for group examinations to detect early tuberculosis. Lung surgery is practised everywhere, but B.C.G. and gold therapy are not valued highly. In popular health education visual training by means of exhibits is stressed, but various cults, quacks, and nature healers are demanding Government recognition, and Friedmann's turtle serum therapy continues to be exploited in the face of scientific opposition. Kleinschmidt notes the encouraging sign that the present leaders of the medical profession in Germany are quietly resisting the tendency to be stampeded into any extreme position, and he hopes, therefore, that that country will not lose her place as an inspirer and leader in the world-wide fight against tuberculosis.

CONFUSION IN THE DAIRY

On June 1st the Milk (Special Designations) Order comes into operation. The new designations will be "Tuberculin Tested," "Accredited," and "Pasteurized." The first of these will replace the existing designations, "Certified" and "Grade A (Tuberculin Tested)." Where "Tuberculin Tested" milk is pasteurized it must be sold as "Tuberculin Tested Milk (Pasteurized)," and where it is bottled on the farm it may be described as "Tuberculin Tested Milk (Certified)." The second designation, "Accredited," will replace "Grade A" milk. This description is intended for the raw milk from cows which are regularly inspected by a veterinary surgeon but are not tuberculin-tested, and it will be subject to the same bacteriological test as "Tuberculin Tested" milk. After the end of this year the present method of prescribing the bacterial standard by a "plate count" test of 200,000 bacteria per millilitre will be superseded so far as raw "Tuberculin Tested" and "Accredited" milks are concerned by a colour test as recommended in the recent report (Series No. 206) of the Medical Research Council, but the test for coliform bacillus will be retained as at present. At its recent meeting the Public Health Committee of the British Medical Association, as it has done times before, gave considered attention to these designations, believing that they may carry enormous importance from the public health point of view. The feeling was strongly expressed in the committee, and took the form of a resolution, that the new Order fails to remove the confusion of designations attached to grades of milk, that it provides for the sale of milk under the designa-

tion "Accredited" which affords no guarantee of safety, and that it places new difficulties in the way of pasteurizing establishments. On these grounds the committee expressed emphatically its opposition to the Order in its present form, and this has been sent forward to the Ministry of Health. The People's League of Health has expressed a similar objection, particularly to the designation "Accredited," which in the public mind will have an accent of safety, though in fact the safety of the food concerned is in no way guaranteed. The Public Health Committee also sent forward a recommendation to the Council which it is hoped may be placed before the Annual Representative Meeting, urging that only milk complying with the conditions required for the designations "Tuberculin Tested" or "Pasteurized," or preferably both, can safely be consumed without boiling. It is noteworthy that in some advertisements now appearing in popular newspapers the slogan is used "Drink more Milk," and a Government document is quoted to the effect that an increase in the average consumption of milk to a certain level will result in an improvement of the general health of the community. But there is no indication in such advertisements that milk may be a medium for the conveyance of disease, or that, coming from herds not tubercle-free, it should be pasteurized or boiled before use.

A MEDICAL BIBLIOPHILE

Dr. Le Roy Crummer's *Odyssey*[1] consisted of several voyages to Europe in search of books written by medical authors in the sixteenth and seventeenth centuries. Born the son of a physician, and himself a physician practising in Omaha, he was endowed with a competency, married a wife who developed an instinct for collecting rare medical books, and was childless. Until 1922 he was known as a heart specialist and as the author of a well-written book on *The Clinical Features of Heart Disease*, but from that year onwards he was recognized as one of the great book-buyers of the medical world. He died all too young in 1934, leaving his collection to the University of Michigan. How different are the ways of collectors! An Englishman studies his catalogues of second-hand books, chooses what he wants, and then writes, telegraphs, or pays a visit to the bookseller, usually as a customer. Dr. Le Roy Crummer used to come to Europe with a special purpose, visited the bookshops in England, France, Germany, and Italy, made friends with the proprietors, stayed with them, talked with them, and ate with them until he discovered what they had on their dustiest shelves. In this way he secured books of such great interest that Mrs. Crummer in 1925 issued a catalogue of the 936 books and 287 portraits in his library, and supplemented it in 1927 with 442 additional items. What they cost is nowhere stated; Sir D'Arcy Power, writing to acknowledge the receipt of a copy of the first catalogue, said, "Of course the proper thing for you to do now is to add in each case the price you paid for the book," but answer came there none. Unlike most collectors, Dr. Crummer was generous in the extreme. The three volumes of manuscripts in the writing of William Heberden the elder he gave to the Royal College of Physicians of London, and his *Odyssey* mentions other instances of his liberality. Vesalius, Harvey, and Jenner interested him most, but he is known best for his collection of fugitive sheets, anatomical plates with superposed parts, printed in Europe towards the end of the sixteenth century. Their use perhaps was to facilitate a knowledge of anatomy amongst artists and the general public. Many were issued; few have survived. The editor, A. Gaylord Beaman, has done his work well. He leaves Dr. Crummer's friends to tell the story of his life, each in his own way, and we thus get a portrait from different angles of a many-sided man. It shows him to have been a lovable gentleman, possessed of great enthusiasm, to whom the University of Michigan owes a deep and lasting debt of gratitude.

[1] *A Doctor's Odyssey. A Sentimental Record of Le Roy Crummer, Physician, Author, Bibliophile, Artist in Living, 1872–1934.* By A. Gaylord Beaman. Baltimore: The Johns Hopkins Press; London: H. Milford, Oxford University Press. (11s. 6d.)

ATROPINE TOLERANCE

In a series of papers in the first number of the newly published *Bulletin de l'Académie de Médicine de Roumanie* (pp. 38, 67, 82, 91) Danielopolu and Radulesco recall that ampoules of 1.1 c.cm. containing 2 per cent. of morphine and 0.05 per cent. of atropine, at first exempted from the restriction of the International Opium Convention of 1925, were later reported to have been used to a large extent by Egyptian morphinomaniacs, who habitually ingested together with 20 to 48 cg. of morphine 5 to 10 mg. of atropine. (The maximum British Pharmacopoeial dose of atropine is 1 mg.—1/60 grain—but in some other countries 2 mg. is regarded as an average dose.) From researches reported to the Paris International Public Health Committee during the past two years Danielopolu and Radulesco conclude that the apparent immunity to toxic doses of atropine is by no means entirely due to a morphine-atropine antagonism, but chiefly to the acquisition by man of tolerance to progressive doses of atropine. The human subject, by nature extremely susceptible to very small doses of atropine, can in most cases bear without inconvenience, after a gradual increase of dosage by 1 mg. daily, as much as 19 mg. in twenty-four hours. Not "vagotonic" individuals only, but the great majority of normal persons show this tolerance, which is due to diminution of tonus in both the sympathetic and the parasympathetic vegetative nerves. It follows that the mixtures of morphine and atropine which are in pharmaceutical commerce are not incapable, by reason of their atropine content and its disagreeable effects, of satisfying the morphinomaniac; and, further, that there is a risk that the addict, accustomed to large doses of morphine and cut off from his usual sources of supply, who takes *faute de mieux* to morphine-atropine mixtures, may suffer from acute atropine poisoning. According to Danielopolu and Radulesco small doses of atropine (up to 0.25 mg. intravenously) excite both sympathetic and parasympathetic nerves, chiefly the latter; medium (therapeutic) doses paralyse the parasympathetic; toxic doses, besides having a direct effect on organic tissues,

paralyse both sympathetic and parasympathetic nervous systems. They suggest that by use of progressive doses, with production of tolerance, it is possible that with avoidance of toxic symptoms the last-named "hypo-amphotonic" effect may be attained with therapeutic success in hyperpiesia, in Graves's disease, and in tabetic gastric crises. In sea-sickness (which in theory and perhaps in practice may be rendered worse by the parasympathetic excitation of the usual small doses of atropine) the authors find that moderate doses (1.5 mg. by the mouth) have a preventive action for short crossings of one or a few hours: for journeys of several days a tolerance is built up by giving doses of 1.5 increasing to 4 mg. daily for four to five days before embarkation and 3 to 4 mg. daily during the voyage. After landing atropine must be given in diminishing doses for two or three days ; otherwise nausea, vomiting, and headache may follow. A similar three or four days' course of progressive doses of 1 to 4 mg. orally is advocated in preparing a patient for chloroform anaesthesia: the parasympathetic stimulation due to the usual small doses given shortly before operation may, it is said, aggravate the inconveniences of the anaesthetic.

PROBLEMS IN CANCER RESEARCH

At a meeting of the North-West London Medical Society on May 12th at the Stroud Laboratories of the Imperial Cancer Research Fund at Mill Hill, Dr. W. E. Gye, the director, and his assistants took the visitors round the laboratories and devoted themselves to explaining the various work in progress. Dr. Gye reminded his audience of the remarkable facts which have been established with regard to the grafting of tumours and the derivation of daughter tumours by the multiplication of grafted cells, so that, in mice for example, tumours can actually be carried on in series *ad infinitum*. Tumours were still being propagated in these animals the origin of which dated back to the first year of the present century. One had only to consider the tumours propagated through generations of mice for as long as thirty-six years to realize that in that time there must have been grown possibly several tons of cancer tissue, yet every cell grown was a lineal descendant of the original mouse tumour. The mouse tumour could only be propagated in mice, and the same was true of the rat and the guinea-pig, the tumour being peculiar to the species. But a notable turning-point in cancer research was the discovery that this did not hold good for the tumours of birds. A tumour of a fowl could be dried, the dry cells inoculated into a normal fowl, and the tumour reproduced. Even the ground-up and filtered tumour tissue on inoculation could cause the tumour to reappear. There was evidently here an infective process, not in the ordinary understanding of the term as applied to familiar diseases, but a process whereby a normal cell could be started on a career of malignancy by simply inoculating the filtrate of the tumour. Dr. Gye showed diagrams of what were known as the Mill Hill 1, fibrosarcoma, the Mill Hill 2, endothelioma, and the Rous sarcoma. Mill Hill 1, which first occurred in a bird on the laboratory farm as a hard slow-growing mass, took about a year to kill its host ; the Rous sarcoma, on the other hand, was a very rapidly growing tumour, while Mill Hill 2 was also rapid, killing in some five or ten weeks. These tumours had different rates of growth, different metastatic habits, different structures ; each of them was caused by a virus, and the virus, so far as any test could reveal, was the same or almost the same in all three varieties. The problem was to determine how far viruses existed in tumours generally. Clinically and microscopically there was no difference between these tumours and the tumours seen in medical practice. They occurred in the same erratic, sporadic fashion, and exhibited the same phenomena as the tumours with which clinicians were familiar. Yet there remained this difference: with the bird tumours the virus could be demonstrated ; in the case of the tumours in the small mammals this could not be done directly. During the last three or four years, however, this difference had begun to break down. Shope of the Rockefeller Institute in New Jersey one day shot a cottontail—a common name in America for a species of hare. He observed on its body a papilloma, and taking the animal to his laboratory he removed this growth and transferred it to domestic rabbits, when it showed itself capable of transmission by means of a virus. The virus causes the formation of a papilloma which generally passes into the malignant form of skin tumours—a squamous-cell carcinoma.

RESEARCH DEFENCE SOCIETY

The tenth Stephen Paget Memorial Lecture on "Manson, Ross, and Reed: Pioneers in Research on Tropical Diseases" will be delivered by Sir Malcolm Watson, LL.D., M.D., at the annual general meeting of the Research Defence Society at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Tuesday, June 9th, at 3 p.m., when the chair will be taken by the president, Lord Lamington, supported by Sir Arthur Stanley, chairman of committee, and Professor A. V. Hill, F.R.S., vice-chairman of committee. After the meeting the Museum and Ross Memorial will be open to visitors.

The George Alexander Gibson Memorial Lecture will be delivered before the Royal College of Physicians of Edinburgh on Monday and Tuesday, June 8th and 9th, at 5 p.m. by Sir Thomas Lewis. Subject: "Symptoms and Signs of Embolism in the Limbs, with Special Reference to Pain."

A meeting of the Australian and New Zealand Association for the Advancement of Science is to be held in Auckland, New Zealand, in January, 1937, from the 12th to the 19th inclusive. Any medical men who are likely to attend this meeting, and who are desirous of presenting papers to the Section of Medical Science and National Health, are asked to communicate with the Sectional Secretary, Dr. J. Egerton Caughey, 3, Alfred Street, Auckland, N.Z., at their earliest convenience, in order that the work of the Section may be arranged.

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the rheumatic diseases met with in general practice.

SPONDYLITIS: OSTEO-ARTHRITIS: LUMBO-SACRAL AND SACRO-ILIAC STRAIN

BY

C. W. BUCKLEY, M.D., F.R.C.P.

Spondylitis

Spondylitis is generally regarded as synonymous with arthritis of the spine. There are two main types—ankylosing spondylitis and spinal osteo-arthritis—and the former of these, while having much in common with rheumatoid arthritis, differs in important details, but spinal osteo-arthritis presents no essential difference from ofteo-arthritis elsewhere and calls for the same general principles of treatment.

Ankylosing spondylitis is a disease of late adolescence or early adult life: patients whose symptoms appear to have begun in the forties will generally be found to have had premonitory symptoms years before. Transient rheumatic pains in the back, or often in the limbs, clearing up without trace at first but gradually becoming more persistent and settling in the back should arouse suspicion and call for systematic treatment. Movement becomes more painful and stiffness more pronounced until the spine is a rigid bar ; in the majority of cases by the time this has occurred ankylosis of the hip-joints will have taken place and there will be some degree of stiffness of the shoulders and knees and perhaps of the mandibular and sterno-clavicular joints. In most cases the ankylosis seems to start in the sacro-iliac region and spreads very quickly to the lumbar spine and the hip-joints.

There is marked absorption of calcium from the adjacent bones, side by side with ossification of the ligaments and the outer portion of the intervertebral disks, complete bony union being the result. Sometimes there are quiescent intervals with considerable improvement, but after months or even years the symptoms generally recur. The chest becomes fixed from ossification of the costo-vertebral joints, and pulmonary complications are likely to prove fatal.

Treatment of Spondylitis

Three main principles must be observed: (1) to raise the resistance by attention to the general health and nutrition and by dealing with any obvious focus of infection ; (2) to guard against the development of deformity and to maintain mobility ; (3) to adopt any special medicinal treatment that may seem likely to help.

The first object calls for much the same regime as would be adopted in treating tuberculosis—suitable food, hygienic surroundings, fresh air, and sunshine, the last-mentioned not to be overdone. Cod-liver oil is indicated, but if it cannot be tolerated the vitamin A and D preparations may be substituted. Rest in bed or on a couch is essential so long as the disease is active, but in the milder cases a certain amount of gentle walking exercise may be permitted for only brief periods. Systematic breathing exercises must be carried out to maintain so far as possible the mobility of the thorax ; the joints of the limbs must be put through a full range of movements in the lying posture daily. When deformity has already appeared—generally dorsal kyphosis with flattening of the lumbar curve—the patient must be kept in bed, lying in a plaster shell moulded to the back but straightened out slightly before it has set. The shell is padded with cotton-wool, the amount being gradually reduced until the back has straightened to fit the shell. A fresh shell, a little straighter, is then made, and the process repeated until the back is as straight as may be possible. A spinal support should then be made which can be worn permanently.

VACCINES AND GOLD

Vaccines do not appear to be of service as usually given, but the intradermal vaccination devised by Ponndorf is sometimes valuable, probably acting as a non-specific desensitizing agent. The Ponndorf B vaccine, which has bovine tuberculin as a basis combined with mixed strains of streptococci, is the most suitable. It is used by rubbing into a scarified area on the arm as in ordinary vaccination ; about a quarter of a tube over a square inch of skin surface may be tried at first and repeated at intervals of two or three weeks, gradually increasing the amount. There is generally a local reaction with redness and some exudation, with a slight rise of temperature on the second, third, or more often the fourth day, and some increase of pain and stiffness may be experienced.

Gold may also be tried along the lines adopted in the treatment of arthritis. The dose should be small and only very gradually increased. I prefer myocrisin, giving an initial dose of 0.01 gram, repeated every four or five days with an increase of 0.01 gram each time till a total of 1 to 1.5 grams has been given, when an interval should be allowed before a second course is started. Frequently no definite effect is noticeable until the second course. Toxic effects—albuminuria, stomatitis, and skin rashes—must be watched for. The simultaneous administration of calcium lessens the risk of complications ; liver, too, is often of some value in this direction and as a general tonic. Radium emanation in solution and thorium preparations, hypodermically, have been extensively tried in France, and good results are claimed.

LIGHT THERAPY

Local applications of infra-red rays to the spine relieve pain. Ultra-violet irradiation also has a beneficial action as a general tonic and by tending to counteract the decalcifying process in the bones. *X*-ray treatment to the spine has sometimes given good results. Light general massage to maintain the tone of the muscles and improve the circulation will do good, but hard rubbing and forcible manipulation are absolutely contraindicated. A course of spa treatment will be of value if it can be prolonged over several weeks and combined with the regime of rest and systematic exercises already described, but the ordinary " cure " of three or four weeks is not likely to be of much service. Deep immersion baths in which exercises can be carried out and combined with douching to the spine are the most generally useful procedures.

Osteo-arthritis

Osteo-arthritis is mainly a degenerative condition, though it may be associated with toxic conditions such as tend to cause degeneration elsewhere, especially in the circulatory system, and treatment must be dependent on these factors. Those joints which have had their cartilages damaged by accidents, often slight but repeated, or by

excessive use as may occur in certain occupations, or by previous attacks of gout or other forms of arthritis, are likely to be affected. Any interference with the blood supply reduces the power of repair and making good of ordinary wear and tear ; hence arteriosclerosis is an important cause of osteo-arthritis. Osteo-arthritis of the hip is common among riding men, and this, while possibly associated with trauma, has been attributed to the obstruction of the blood supply through compression of the artery of the ligamentum teres owing to the extreme abduction of the hip. This may explain the occurrence of osteo-arthritis in other occupations.

The pathological effect of these varied causes is degeneration of the cartilage, which gradually becomes worn away or destroyed and the underlying bone becomes denser and often eburnated. Small areas of osteoporosis giving the appearance of cysts may be detected in radiographs, and osteophytes form around the margins of the affected joints, Nature's attempt to reinforce the weakened structures. These osteophytes are not of importance unless of such a size or in such a position as to interfere with the free movement of the joint. Many patients have been needlessly alarmed when a radiograph taken for some other purpose has revealed their presence and the radiologist has reported that there is arthritis—without any qualifying adjective. Such new bone formation may be present, in the spine particularly, for many years without giving rise to symptoms ; in the absence of definite symptoms spinal osteo-arthritis is not important, but it must be clearly distinguished from spondylitis of the ankylosing type.

SYMPTOMS AND PROGNOSIS

The earliest symptom may be pain, but this is very variable and is most marked where there is pressure on the damaged cartilage ; hence it is common when the hip-joint is effected, but is often absent in osteo-arthritis of the shoulders, the hands, or the spine. Stiffness of some degree is almost always complained of, due in the earlier stages to muscle spasm and to fibrositis, which is frequently present in the tissues around the joint ; later, limitation of movement becomes more pronounced from thickening and contraction of the joint capsule and the formation of osteophytes.

Osteo-arthritis does not tend to shorten life, but the degenerative and hypertrophic changes persist and increase unless the factors of strain or overuse can be removed and the circulation improved. Otherwise disability will increase steadily, and if the hip is affected lameness may be marked. Unless care is taken to carry out movements of extension of the hip regularly the limb may become flexed and often adducted, making walking difficult or impossible. In the case of other joints the results are less serious.

Treatment of Osteo-arthritis

Attention must be given to the general condition with a view to lessening strain on the affected joints and to checking so far as possible the degenerative processes. Patients are often overweight, and as this throws additional work on the hips and knees reduction of the carbohydrate intake will be indicated. If the blood pressure is raised or there are signs of renal inadequacy the nitrogenous foods will need to be controlled. In general it may be said that a reduction all round within reasonable limits is desirable. Care must be taken to secure regular and adequate bowel action, as toxic absorption from this source appears in some cases to be an aetiological factor. So far as possible strain on the joints and excessive wear and tear must be avoided ; but complete rest is not desirable ; the joints should be put through as full a range of movement as they are capable of daily. A calliper splint adjusted to take the weight off the affected limb is often useful in hip- and knee-joint cases, and gives great relief from pain. Although it may be irksome at first the relief is such that most patients are glad to put up with the inconvenience. In the case of the back a firm well-fitted corset or brace may help but is not often required, and in other joints which are not bearing weight splints or supports are unnecessary.

Obvious septic foci should be treated on conservative lines. Extraction of septic teeth is desirable when the condition of the patient permits, as the constant passage of pus into the stomach and general circulation has a prejudicial effect on the health, but there is no evidence that pyorrhoea or any other sourse of sepsis is a direct cause of osteo-arthritis.

HEAT AND MASSAGE

Measures to improve the circulation in the neighbourhood of affected joints should be adopted, and for this purpose the various methods of applying heat are useful: for deep-seated joints like the hip diathermy is best and often gives marked relief from pain ; in other cases infra-red rays may be used with advantage. If judiciously used light massage may be of value to reduce muscle spasm, to improve the local circulation, and to promote resolution of fibrositic thickening ; but deep massage should not be applied to the joints themselves ; their condition is often the result of injury and such treatment will only increase the damage. This does not, however, debar gentle superficial friction with analgesic liniments, such as salicylate preparations, which frequently give much relief from pain.

Iodine ointments are often used in this way, and the iodide of potash and soap liniment is sometimes effective in promoting absorption of fibrositic thickenings, but it is obvious that osteophytes cannot be rubbed away or removed by these or any similar procedures. Iodine may also be employed in the form of an oily solution such as lipiodol for injection into the muscles in the neighbourhood of the affected joint ; 1 or 2 c.cm. every two or three weeks, or at longer intervals, provide a reservoir of the drug from which absorption into the circulation continually goes on with definite relief of pain and stiffness in many instances.

IONIZATION

Ionization is another useful method of applying iodine or other drugs which is adapted to joints more superficially situated, iodide of potassium being used, or, if chlorine ions are desired, T.C.P. (trichlorophenyl-iodomethyl-salicyl). Periodic courses of treatment at a spa are very helpful ; the use of deep hot immersion or pool baths facilitates the movement of stiffened joints often to a remarkable degree. While in the bath douches are applied to the joints and exercise a deep but gentle massaging effect without injuring the tissues. Previous to the bath the application of local or general vapour baths, hot air, or packs of mud or peat enhances the local effect by producing vaso-dilatation and a free flow of blood and lymph. Douche massage is also employed, but is not free from the risk of inflicting further injury on the already damaged joints. The beneficial effects of rest and change combined with the eliminative action of the mineral waters add to the value of the treatment.

DRUG THERAPY

The internal use of drugs is of little value. In giving iodine the French tincture has its advocates, but I prefer a solution of pure iodine in rectified spirit (30 grains to 1 ounce). It should be taken in milk, which disguises the taste, beginning with one drop three times a day and increasing by one drop every three or four days until five drops are being given. This dose is continued for a month or six weeks, then reduced again and omitted for a period, after which it may be repeated ; this course

may be followed for as long as is desired. Organic iodine compounds may be better tolerated. Sulphur was formerly popular, particularly in combination with guaiacum in the form of a confection known as the "Chelsea pensioner." A combination of iodine with intestinal antiseptics appears to be of service in some cases (alphidine 1/2 grain, guaiacol carb. 5 grains). Aspirin is useful for the relief of pain, which is sometimes severe and interferes with rest; if insufficient alone it may be combined with phenacetin, and the addition of a small dose of codeine appears to be still more effective.

None of these remedies can be expected to remove the osteophytes or repair damaged cartilages, but they are probably effective in relieving associated fibrositis and perhaps in slowing the progress of the degenerative changes which characterize the disease.

Sacro-iliac and Lumbo-sacral Strain

These conditions are traumatic in origin; they may either occur independently or be combined. The commonest cause is attempting to lift a heavy weight which slips and throws a sudden and unexpected strain on the muscles and ligaments of the lumbar spine or sacro-iliac joints. Long-continued postural strain may produce the same result, and a prolonged surgical operation, with full muscular relaxation, without support to the loins being provided, is frequently followed by chronic pain in the back due to lumbo-sacral strain. It is important to remember that ligaments are well supplied with sensitive nerve endings and will react to undue tension with pain. A reflex effect of the pain may be persistent spasm of groups of muscles—a source of further pain and stiffness. The pain tends to radiate; sciatica is frequently due to sacro-iliac strain.

Treatment

If on examination any deviation from the normal, such as scoliosis or flattening of the normal lumbar curve, is detected an attempt should be made to correct this by manipulation. An anaesthetic may be necessary, but any forcible measures are best left to the orthopaedic surgeon, and *x*-ray examination will be a wise preliminary. Often, however, hyperextension of the hips and lumbar spine, or in other cases flexion of the thighs on the abdomen, with only such force as can be employed without the aid of anaesthesia, will produce satisfactory results. Such a procedure may advantageously be preceded by the application of heat to the back, radiant heat, poultices; or even a prolonged hot bath will relax the muscles and enable the necessary manipulation to be more easily carried out, and massage to muscles obviously in a state of spasm will often assist. This kind of treatment can be given effectively by a properly trained masseur, and a course of heat and massage should follow the manipulation except where the strain is the result of a definite effort, when rest will be desirable after the manipulation in order to give the strained ligaments a chance to repair. For this purpose strips of adhesive plaster may be used, their exact mode of application depending on the nature of the injury, but in the lower back they should encircle the hips so as to hold the sacro-iliac joints together and relieve any strain on the ligaments. In lumbar strain diagonal strapping across the back will generally be required with or without strapping round the hips.

In chronic strain of postural or static origin massage and exercises are indicated, combined with the wearing of a suitable sacro-iliac belt or corset. Steel supports are rarely if ever required in these conditions, but care must be taken to remove the cause if due to occupation or faulty posture. Some cases result from motor driving with a badly adjusted driving seat; a cushion correctly placed will often make all the difference. A careful study of the patient's posture, habits, and occupation is essential to success in diagnosis and treatment.

PSYCHOLOGY AT OXFORD

BY

WILLIAM BROWN, M.D., D.Sc., F.R.C.P.

WILDE READER IN MENTAL PHILOSOPHY, AND DIRECTOR OF THE INSTITUTE OF EXPERIMENTAL PSYCHOLOGY, UNIVERSITY OF OXFORD

Psychology has had a long past, but a short history. Although it was recognized as a definite branch of knowledge in the times of the ancient Greeks, and was singled out by Aristotle for discussion in a distinct treatise, its general position until very recent times has been that of handmaid to philosophy (logic, ethics, aesthetics, metaphysics), with but little independence of method and none of aim or function. Only within the last fifty years has it achieved any independent status comparable to that of the various physical sciences.

This general position is reflected in the history of psychology in the University of Oxford. Psychology has always had a place in Oxford education. The attention of generation after generation of her students has been drawn to the psychological aspects of mental processes and social behaviour. John Locke, author of the *Essay Concerning Human Understanding* (1690), who is acclaimed as the founder of modern psychology, was a son of Oxford and a student of Christ Church. His name is perpetuated in the John Locke Scholarship in Mental Philosophy (founded, like the Readership, by the late Henry Wilde, F.R.S.), for which psychology is one of the examination subjects. Psychology may also be offered as a special subject in the Honour School of Literae Humaniores, commonly called Greats. But apart from these two possibilities the subject of psychology does not figure in any of the University examinations. The whole subject has been a subordinate one within the School of Philosophy.

The Wilde Readership

The Wilde Readership in Mental Philosophy was founded and endowed in 1898. Its first holder was Professor G. F. Stout, who, after five years, proceeded to St. Andrews as professor of logic and metaphysics. He was succeeded at Oxford by Professor William McDougall, F.R.S., who held the position for seventeen years, relinquishing it eventually for Harvard, and later going on to Duke University, N.C., where he has been professor of psychology since 1927. These two names, of international reputation, prove that, however restricted and incomplete the facilities for study and research at Oxford in this subject may have been, the subject has been worthily represented in the persons of its teachers.

The term "mental philosophy" for the purposes of the Wilde Readership is defined as "the study of the human mind based on observation and experience as distinguished from experimental psychology." Thus the teaching of experimental psychology is excluded from the sphere of the occupant of the post. Although the first director of the newly created Institute of Experimental Psychology is the present holder of the Wilde Readership, there is no permanent integral connexion between the two appointments, and the appointing body in each case is quite different. On the other hand, a bias towards the medical aspects of psychology is indicated by the inclusion of "illusions and delusions which are incident to the human mind" as one of the lines along which the Wilde Reader may properly direct the attention of his students.

Oxford has been singular among great universities in possessing no laboratory of experimental psychology. Since the first such laboratory was founded, by Wilhelm Wundt the German psychologist, at Leipzig in 1879, almost every university in Europe and America has come to include such a provision in its research equipment. Shortly before the war Professor McDougall made an attempt, for a while successful, to establish a laboratory of this kind at Oxford. It would no doubt have become a permanent institution but for war-time disruption and for the abnormal conditions of the immediate post-war period, when the Reader found himself deprived of the necessary accommodation and other facilities, which were put to other urgent use.

In 1921 Professor McDougall was succeeded in the Wilde Readership by the present writer, who, incidentally, had been his first student and who, sixteen years previously, when an undergraduate at Christ Church, Oxford, was the first to avail himself of the method just mentioned, of taking psychology as a special subject in Greats, also becoming in the following year the holder of the John Locke Scholarship. After having worked for twelve years in the well-appointed psychological laboratory at King's College, London, it was a disappointment to the new Reader to have no facilities of accommodation or apparatus for experimental work on his subject. Another attempt to institute an experimental laboratory was made, but was unsuccessful. On the other hand, there was no mistaking the keenness shown by the students in the theoretical aspects of the subject, and in such of its practical applications as could be developed in the courses. On many occasions so large have been the attendances at the lectures—the students being drawn from theology, medicine, literae humaniores, biological sciences, and other faculties in the schools, including also those studying for the diploma in education—that no lecture room at Christ Church could accommodate them, and an adjournment has had to be made to the hall.

Plans for the New Institute

It was this evident interest of both graduate and undergraduate Oxford in the theoretical aspects of psychology —as wide as human affairs—and also a particular interest on the part of the benefactor in the clinical methods of prolonged or "deep" analysis, where psychology finds its most direct application to the remedy of human ills, that encouraged a generous donor in the latter part of last year to offer to the University through the Wilde Reader the sum of £10,000 towards the foundation of an institute of experimental psychology. The offer was gratefully accepted, and by an enactment of the University an institute is now to be established, the University providing such accommodation as the curators of the University Chest may approve. Its management is to be in the hands of a committee, headed by the Vice-Chancellor and including representatives of the Faculties of Medicine, Literae Humaniores, Biological Sciences, and Social Studies, and the Director. A sum of £500, together with an annual grant of £150 a year for five years, is to be allocated to the institute from the Rockefeller Benefaction for Research in the Social Sciences.

Thus an objective which has been long in the vague distance becomes immediately realizable. Oxford students will be able not only to have instruction in the theoretical side of the subject but to pursue research and to observe how far, through experiment, the conclusions of psychology enter the realm of precision and verifiability. It will be possible to teach and survey the subject in better perspective and proportion. The institute will also serve as an important experimental adjunct to the work of the Faculty of Social Studies, which, so far as research is concerned, is more especially interested in politics and international relations and in economics.

What is Experimental Psychology?

The term "experimental psychology" may convey little to some minds, and to others the idea of research in such a field may be slightly repugnant, suggesting the probe and measuring rule in the deep things of the human spirit. Experimental psychology is not so much a new science as an improved technique, and it is not, and never can be, the whole of psychology. Psychology has been defined as the science of the mind, with introspection as the fundamental method by which it acquires its data, and experimental psychology is merely the carrying out of introspection under prearranged conditions.

In the performance of a psychological experiment the co-operation of two persons—the experimenter and a subject—is generally necessary, though in certain cases it can be carried out by one and the same person. The experimenter arranges the external conditions of the experiment, manipulates apparatus, or makes other adjustments whereby modifications are produced in the consciousness of the subject, while the subject observes these mental changes in himself by careful introspection, and records them with as much detail as possible. Thus the objective and subjective conditions of mental change can be accurately controlled, and the experiment can be repeated by the same or other workers in the same laboratory or elsewhere, and in this way results may be compared, and gradually, through closer and closer experiment, the general laws of mental reaction deduced.

Many illustrations could be given of the lines of research which may be usefully pursued in a laboratory equipped, as it must be, with special apparatus. Investigations may be made, for example, into the different forms of human perception and observational processes, also in the domain of memory and association of ideas, where the possibilities of experiment are well-nigh unlimited, and again into mental efficiency and mental fatigue. The measurement of thought processes and processes of volition may be undertaken, and the whole science of mental variation and correlation, and the interrelationship of mental abilities may come under review. The practical application of these studies to industrial efficiency and vocational guidance is itself a vindication of the scientific status of experimental psychology. Another field of immense importance to be explored is medical psychology in so far as experiments on normal individuals are necessary to furnish the standard whereby the pathological may be justly estimated.

The above gives only a rough indication of the field of experiment open to psychology. It is a field which is continually extending with the refinement of apparatus and methods, although, as already stated, a stage will never be reached in which the whole of psychology is covered by experiment. The theoretical side must always outrun the side of precise determination. Nevertheless, it is only through experiment that the deductions of psychology can be discussed in precise terms and its findings repeated and verified. Psychology sees new territories awaiting it, but it is as necessary for it as for any other branch of science to consolidate by irrefutable experiment the ground already covered. It is a great satisfaction to Oxford men that the University should soon be abreast of other seats of learning in its facilities for what has been called "humane research," and that there will be a complete department of psychology where Oxford students and graduates from other universities—British, imperial, and foreign—will be able to study every aspect of a science which is concerned on so many sides, and so fundamentally, with human well-being.

INDUSTRIAL MEDICINE

The fourth meeting of the Association of Industrial Medical Officers was held in Birmingham on May 22nd and 23rd.

After the business meeting a paper was read by Dr. H. B. Trumper on "Labour Management and Medical Service," and the discussion was opened by Professor Millais Culpin and Mr. R. Lloyd Roberts, chief labour officer of Imperial Chemical Industries, who attended as a guest. A description was given of the ways in which labour control, to be of most benefit to industry, required the help and services of a medical man. The importance of the industrial medical officer being in close and intimate contact with works management was also emphasized. A plea was made for the appointment of whole-time medical officers by the larger industrial concerns of this country.

On the evening of May 22nd the members were entertained to dinner in the Midland Hotel by the directors of Imperial Chemical Industries, with Mr. J. Rogers in the chair. Among the guests were Dr. Stanley Barnes, dean of the Faculty of Medicine, Birmingham University, Dr. M. W. Paterson, honorary secretary of the Association of Certifying Factory Surgeons, Dr. E. R. A. Merewether, H.M. Medical Inspector of Factories, and Dr. Clyde McKenzie. The toast of "The Association" was

given by the chairman, and replied to by Dr. N. Howard Mummery (J. Lyons and Co.) and Dr. L. P. Lockhart (Boots Pure Drug Co.).

On May 23rd the meeting was continued at I.C.I. Metals Limited, Witton, when Dr. Donald Stewart (I.C.I.) opened a discussion on "The Treatment of Industrial Injuries," followed by Dr. Margaret Hossell (Rowntree's). Dr. Stewart described the work of his clinics in relation to the treatment of both major and minor injuries, and in addition discussed certain practical preventive measures which are being actively taken up by industry to-day. Following this meeting members of the association were conducted round the works and had the opportunity of seeing at first hand and in detail much of the non-ferrous metal industry, the potential risks of injury, and the preventive measures taken by the modern employer to safeguard the health and welfare of his employees.

EAST LONDON CHILD GUIDANCE CLINIC

This clinic held a demonstration of work and methods at the Jews' Free School on May 18th. Professor C. S. MYERS took the chair at the general meeting which preceded the demonstration, and Lady CYNTHIA COLVILLE explained to the guests the work of the clinic and its value to the child patients and to the community at large. Accurate knowledge even of the physical nature of the human body had only been gained during the last hundred years, and the connexion between the body and the mind was as yet but vaguely guessed at. Many problems of moral evil were intimately bound up with mental processes, and only skill in unravelling those processes could really reach the source of the trouble. As a magistrate in the juvenile courts at Toynbee Hall she had seen something of the extraordinary successes which skilled and understanding treatment of children achieved in what appeared hopeless cases of delinquency. Many of the children came from unhappy homes, but others had some twist in their experience which was not so easily explained. Thieving, spiteful, and backward children became transformed after a few sessions at the clinic into normal and happy youngsters, ready to take up life and meet it on its own terms. The vital thing the clinic treatment did was to give patients the courage to face certain hard facts about themselves and their surroundings.

Juvenile Crime

Mr. J. J. MALLON, warden of Toynbee Hall, said that the juvenile court owed a great debt to Dr. Emanuel Miller, which had so far not been acknowledged and certainly not repaid. Of those persons who were taken into custody in 1935 for indictable offences 26 per cent. were under 17 years. The largest age group of those charged with larceny was around 13 years. These were grave figures, but it was easy to understand why children, in this age of upset, should be particularly apt to commit offences of this sort: they were so much tempted and played upon by influences which must be extremely disturbing; most of these young offenders needed help, and could be helped. Many of their crimes lost significance when looked at with an understanding eye. Much lawbreaking, especially larceny, was due to thwarting of valuable ambitions, and some cases in which children merely stole to buy sweets were not crime at all, but glandular insufficiency. The work of the clinic went even beyond the treatment which it gave to children, for it was educating the nation to the grave defects in the educational apparatus. The mental treatment of children was the more important now because children were becoming a waning asset in the population. Instead of the position in Japan, where each old person had several young ones to lean on, the danger would be that each young person had to bear the burden of several old ones. The new generation would be much more heavily burdened with responsibility than its predecessors, and the future of the nation depended on its fitness to bear that burden.

Methods of Treatment

Dr. EMANUEL MILLER, the director of the clinic, explained its organization and the distribution of the work between psychiatrists, psychologists, and social and playroom workers. The information obtained by the workers was sifted and embodied in the various diagrams and statistics which were on view, and in years to come would be incorporated in a new understanding of the child by society in general. The clinic recognized the importance of treating, not disease, but the mental attitudes, which were the natural efforts of the child to find happiness in is own way. Many children regarded as public and family nuisances became extraordinarily pleasant in the clinic. Sometimes the terrible little delinquent became a favourite: he was a normal child who had fallen into a situation which called for a strange way out. The staff of the clinic showed illustrative cases and explained the social approach and the tests which were used to discover the intellectual and temperamental endowments of the children. Visitors saw play methods demonstrated and a film taken in the play-room to show the sort of reactions which children actually manifest. There was also an interesting exhibition of children's drawings, in which the child's imagination revealed some of its mental problems.

Reports of Societies

CONGENITAL DEFORMITIES OF MECHANICAL ORIGIN

At a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine on May 22nd, with Sir L. BARRINGTON-WARD in the chair, a short communication was made by Mr. DENIS BROWNE on congenital deformities of mechanical origin.

Mr. Browne opened with the remark that a recognition of the large and important class of these deformities had been stayed rather by a reluctance of the profession to face up to its mechanical problems. One thing which was most important to his argument was the production of dimples—not the facial dimples regarded as a sign of joyousness or good humour, but depressions and indentations such as were seen in the infant over the knuckles, the elbows, the external condyle of the femur, and very often over the acromion process. These occurred where there was a bony point in the foetus in contact with the uterine wall. The tissues there became adherent by the compression of the wall against them, and when that pressure was removed there remained the pitting amid the surrounding fat. Any deviation from the normal position of the foetus would produce dimples in other parts.

The first pathological conditions of which he spoke were those which came about when there was abnormal position only, without fault in development. The feet were the parts most exposed to pressure, and what was called equinovarus—a name to which he took some exception—was simply the middle of a series of deformities varying in severity. In double talipes it was always noticeable that one foot was worse than the other. This was the foot that had been on the outer side in the cross-legged position *in utero*. Postural torticollis was another condition to be explained in a similar way. He had also seen transient facial paralysis in the infant, which was due, no doubt, to the pressure of the shoulder on the facial nerve. Another condition was acrocephalo-syndactylism. In many papers on that subject the possibility never seemed to be mentioned that the hands and the face might have been jammed so that a mutual pressure deformity resulted. Other conditions were brought about when, although there was normal mechanical pressure, there was both abnormal position and defective development. He instanced cases of congenital fracture of the tibia, in which an acute bend was found in the tibia, invariably over what he called a dimple. Club hands usually belonged to this category. In other cases there

might be normal position but increased mechanical pressure. Here there was an increase in the severity of the stigmata of pressure to which he had already referred, and the spine might not only be bent but compressed, so that afterwards it wobbled sideways. It was also well understood that if limbs were kept confined for a considerable time a peculiar degeneration of the tissues ensued. In an excellent paper in the *British Medical Journal* recently (May 9th, p. 925), R. Watson Jones had discussed the pathology of stiffened and atrophic limbs after fracture. In the infant the muscles might similarly be found badly developed and the joints extremely stiff. In speaking of other cases in which there was altered mechanical and hydraulic pressure as well as abnormal position, he mentioned talipes equinovarus in which muscles and joints were defective—extremely difficult cases to treat. Alteration in the hydraulic process resulted in muscles starved and atrophic and joints stiffened. With an increased amniotic pressure due to a greater amount of fluid the baby could take up attitudes and stiffen in them which would be impossible in the normal uterus. This had an interesting corroboration from veterinary study. There was a well-known disease among sheep in which lambs were born with their legs out in abnormal positions and perfectly stiff, with atrophic vessels and muscles. It was said that shepherds could foretell the birth of such lambs by the undue size of the mother's belly. This could only be produced by hydramnios. Spina bifida combined with talipes and paralysed legs might arise as the result of an accentuated bend in the foetus, the spina bifida appearing at the point of maximum pressure and the legs being compressed. Mr. Denis Browne showed a short reel of cinematograph film to illustrate certain extreme cases of spina bifida. A minor thing was a dimple over a misplaced coccyx. The effect of amniotic bands had sometimes been referred to, but he had seen few cases in which deformity had appeared to arise from that cause. Another group of cases consisted of the effects of spasmodic muscular pressure. Ring constrictions of the limbs and congenital amputations were usually due to mechanical causes, amniotic bands, and so on. Sprengel's deformity of the scapula, he thought, was rather a failure of migration, like undescended testicle, than a pressure effect.

DERMATOLOGY

Alpha and Beta Rays in Skin Therapy

The meeting of the Section of Dermatology of the Royal Society of Medicine on May 21st was addressed by two Continental dermatologists. The first was Dr. SVEND LOMHOLT of Copenhagen, who spoke on the alpha and beta rays in skin therapy.

Alpha Rays

After likening the respective powers of ultra-violet rays and of *x* rays and the gamma rays of radium to the bombardment of a building, the effect of the ultra-violet rays being like pelting with grains of sand, whereas the effect of *x* rays was like the hurling of paving stones, Dr. Lomholt said that in skin conditions a very soft and superficial radiation was often most valuable. In *x* rays, by special apparatus, it was possible to limit the radiation to the external layers of the skin, though the solution of that problem so far as *x* rays were concerned was not ideal. His remarks were specially directed to the utilization of the soft rays of radium, the alpha and beta rays, the effects of which biologically were of the same nature as the gamma rays and the *x* rays. Alpha rays represented over 80 per cent. of the total energy of the radiation of radium, and beta rays about 10 per cent. Alpha rays seemed to be very suitable for the treatment of superficial skin lesions. In practice they could be utilized only in one form—namely, a solution of thorium X, either in alcohol or—a form he did not recommend—applied as an ointment. If an alcoholic solution of thorium X was applied to the skin a demonstrable histological effect was obtained to 0.2 or 0.3 mm. The skin should be covered before application with a thin layer of collodion. As the treatment entailed no risk, dosage was unimportant. The application was followed within twenty-four or forty-eight hours by a marked erythema, which subsided after about eight hours, leaving some pigmentation, of which the patient should be warned beforehand, as it might persist for a considerable time. In refractory psoriasis treatment by thorium X had proved very effective. A precaution to bear in mind was that there must be thorough preliminary removal of scales and crusts. Many forms of dry scaly eczema yielded to this treatment, and the remedy also gave relief in pruritus ani.

Beta Rays

Beta rays also had excellent properties for the treatment of skin lesions, having powerful and yet relatively superficial effects on the skin. Unfortunately the preparation of a suitable form of beta radiation was attended by some practical difficulties. Dr. Lomholt demonstrated the plan he followed, which was to construct some waxed plates of a cardboard-like material in which radium emanation was finely and consistently suspended. These plates were then cut to the requisite sizes and fixed with plaster on the skin. They contained about 0.02 millicurie per square centimetre, and the time of exposure varied from ten to thirty hours. The effect of these emanation plates was due predominantly to the beta rays. Patches of psoriasis disappeared after such exposure, and they had proved useful in many superficial skin conditions.

Neuropathic Eczema

The other Continental speaker was Professor D. E. RAMEL of Switzerland, who addressed the Section on neuropathic eczema, a type of eczema in which the autonomic nervous system acted as a regulator mechanism on the allergic sensibility of the skin.

He said that recent investigations on the microbial flora of eczematous lesions had proved the power of the saprophytic micro-organisms to produce sensitization and an eczematous skin reaction. In his opinion this power of bacterial sensitization of the skin was under the control of the autonomic nervous system. In particular a certain type of eczema existed the neuropathic nature of which seemed probable and could be recognized by the evolution and appearance of the rash. It was a papulo-vesicular eczema limited at first to one area, but tending soon to become generalized with a quite definite symmetrical disposition. After an oozing period the eczema assumed the lichenoid form and the confluent lesions became secondarily lichenified, recalling very closely the appearance of neurodermatitis (lichen of Vidal). An important change of pigmentation complicated the eczematous lesions and vitiligo was seen on the spots more severely affected. The patient, on the development of the rash, complained of definite symptoms, including an intense burning sensation over the affected areas. In some cases there was obstinate insomnia, and the neuropathic character of the eczema was confirmed by the lack of response to appropriate external treatment. The pharmacodynamic tests, with Platz's method, showed an intense but variable neuro-vegetative irritability. This was the subconscious result of a psychic shock, and its effect was the production of an eczema. In addition to the cutaneous symptoms the patients with neuropathic eczema often showed great swelling of the lymphatic glands of the groin and axillae, caused by the prolonged scratching. The number of eosinophil cells in the blood was always high. The injury to the trophic nerve centres appeared to cause an emaciation extending in some cases to cachexia. It was in the patient's suffering from this neuropathic eczema that the allergic reactions of the skin were determined in their clinical form by the disordered activity of the autonomic nervous system. Professor Ramel thought this hypothesis must be borne in mind in the treatment of such patients, for their cases required on the part of the physician a certain amount of tact and a good knowledge of psychology.

GYNAECOLOGICAL CASES

A meeting of the North of England Obstetrical and Gynaecological Society was held in Leeds on April 24th, with the president, Dr. RUTH NICHOLSON, in the chair.

Mr. A. GOUGH reported a case of carcinoma cervicis uteri, with metastases in the glands of the neck.

The patient, a 9-para, aged 66, presented herself in February, 1935, on account of a discharge of blood, which had already continued for six months. On examination a typical cancerous excavation of the cervix was found. The growth appeared to be invading the base of the bladder, and it was classified as Stage III. Histologically, it was found to be a squamous carcinoma of an ordinary cervical type.

The patient was treated with radium by the Stockholm technique. She received three applications, 3,200 milligram-hours, on each occasion. The immediate result was good. She came up for examination after three months, and again at the end of six months, and everything was found satisfactory. At the end of twelve months there was still no sign of recurrence in the pelvis, but enlarged glands were found in both subclavian triangles. On the right side there was a gland the size of a cherry; on the left side it was the size of a bantam's egg, and it was obviously adherent to the subclavian vessels. The gland was removed from the right side of the neck, and a section revealed the structure of a squamous carcinoma, of the same type as the uterine growth. The patient was sent to the radium department for treatment of the neck.

Mr. Gough thought that the cancerous deposits in the glands of the neck might reasonably be supposed to be metastases from the uterine growth, for they were of the same type, and there was no evidence of any other primary source. The disease had presumably travelled along the thoracic duct. This was the first occasion on which he had seen such extension to the neck in a case of cancer of the uterus, and he did not remember ever to have read of such an occurrence. It had, however, occasionally been observed in connexion with cancer of the ovaries and other abdominal organs. Other observers had commented on the greater frequency of metastases after the radium treatment of cancer of the cervix. It seemed that the treatment abolished growth within a certain radius, but that it might continue to spread at the periphery, where the intensity of the radiations had been insufficient to destroy the cancer cells.

Mr. E. STACEY was inclined to think that in certain cases the spread of metastases occurred by way of the blood stream, metastatic emboli being produced as an effect of the radium treatment. Mr. B. L. JEAFFRESON mentioned a case he had seen of first-stage carcinoma of the cervix, where metastases had already extended to the bronchial glands, as demonstrated by *x*-ray examination.

Mr. A. GOUGH also reported a case of tuberculosis of the pelvic organs.

A spinster, aged 21, had complained that there had been an increased menstrual loss for the past ten months, the periods lasting as long as fourteen days, although the intervals were clear. There was no pain and no other symptom. Her general condition was good. She was well nourished, and did not appear to be anaemic. On abdominal examination nothing abnormal was discovered except a general tumidity in the lower zone. By the rectum it was possible to feel a mass the size of a large orange. It was inseparable from the uterus, and several prominences could be felt on its surface. Its mobility was decidedly less than that usually found in a case of myoma of the uterus.

In spite of that circumstance and the youth of the patient, a provisional diagnosis of myoma was made, and on April 3rd, 1936, the abdomen was opened by a left paramedian incision. Universal adhesions were found among the pelvic organs; on separating these, some ounces of yellow serous fluid escaped, and many of the peritoneal surfaces were seen to be studded with tubercles. The uterine appendages formed irregular swellings on both sides, and the uterus itself was considerably enlarged. From this enlargement, and taking into consideration the menorrhagia, it was concluded that the uterus must be involved in the disease. It was therefore removed, with both appendages. The enlargement was mainly due to a thickening of the myometrium, and there was also a tuberculous endometritis, the upper part of the corporeal endometrium being studded with yellowish tubercles. The characteristic structure was seen in microscopical sections.

Mr. Gough considered that tuberculosis of the Fallopian tubes was not uncommon, but it was in his experience rare to find tuberculosis of the uterus. Here he was leaving out of consideration the scattered miliary tubercles which were found on the outer surface of the uterus in cases of tuberculous peritonitis. It was only the second occasion on which he had removed a uterus for tuberculosis. The first case had been very similar to the present one. After the completion of the surgical treatment he had strongly urged the patient to have a course of treatment in a sanatorium, but his advice was not followed. Death occurred six months later from general tuberculosis.

Mr. ERIC STACEY believed that tuberculosis of the genital tract was more common than was generally supposed. During the past three months he and his colleagues in Sheffield had found tuberculosis in nine cases, proved by section of curettings. At a future date he proposed to communicate to the society further observations on the subject. Mr. ST. GEORGE WILSON was of the opinion that the endometrium was as a rule also involved in cases of tuberculous salpingitis. He preferred *x* rays as a form of treatment rather than surgery. Professor MILES PHILLIPS thought that, if careful inquiry were made, a history suggestive of tuberculous peritonitis in childhood could be obtained in a large number of cases. The trouble might lie dormant, and be lit up after marriage. Mr. GOUGH, in reply, expressed surprise at the high incidence which was apparent in Sheffield as compared with Leeds. He stated a personal preference for an operative line of treatment.

Mr. W. R. ADDIS read a note on impaction of the bladder.

A strong-minded multipara, aged 63, had complained of complete urinary incontinence of three weeks' duration. She had had no previous trouble apart from asthma. On abdominal examination a central dome-shaped cystic tumour was found rising to three and a half inches above the symphysis pubis. On vaginal examination that organ was found to be greatly lengthened and directed backwards to more than the usual degree. It was impossible to reach the cervix. A cystic mass continuous with the abdominal tumour was felt to fill the upper part of the pelvis. A provisional diagnosis of distended bladder or fixed ovarian cyst was made, and the patient was advised to enter hospital for investigation.

After much persuasion, and since the incontinence continued, she consented four days later. Attempts at catheterization with a variety of instruments, and even guided with one finger in the vagina, resulted in the catheter striking an obstruction, after passing along the urethra for two inches. With a 10 c.cm. syringe the cyst was then aspirated two inches above the symphysis in the mid-line. After filling the syringe the needle was left *in situ*, and after about 10 c.cm. more of fluid had leaked out the flow ceased. The fluid was clear, slightly straw-coloured, and absolutely odourless. A specimen was sent to the laboratory for examination, but by an error a request was made merely for cytological examination, and the report when it returned was therefore valueless.

The diagnosis appeared to be now rather in favour of a fixed multilocular ovarian cyst, since the fluid did not to sight or smell resemble urine, and the flow ceased at 20 c.cm., which might indicate loculation. The patient was getting restive, and a week later it was decided to perform an exploratory laparotomy.

Since she suffered from asthma, an attempt was made to give a spinal anaesthetic. This, however, failed, and the anaesthetist decided, as it would only be a short operation in all probability, to give chloroform. The abdomen was opened in the mid-line, and, since the bladder had been suspected, great care was taken in opening the peritoneum. Had the swelling been due to the bladder the peritoneum would have been expected to be stripped up from the anterior abdominal wall. Actually, the anterior cul-de-sac was exceptionally deep, and all that could be seen on inspection was a thick-walled cyst rising out of the pelvis. No uterus could be found, and it was impossible, on account of the tight fit, to pass the hand down behind into the pouch of Douglas. A hypodermic needle was then passed into the tumour. Fluid escaped in drops. The first drop had such an intensely ammoniacal odour that the needle was at once withdrawn. The point of puncture showing no sign of leakage, the abdomen was then closed and the patient sent back to bed after attempts had again been made to pass a variety of instruments into what was now known to be the bladder. The patient never recovered full consciousness, but gradually passed into a state of uraemic coma and died forty-eight hours later.

The specimen showed the uterus and appendages, the bladder, the ureters, and the vault of the vagina. The

urethra and its point of entrance into the bladder, however, were absent. The ureters, surprisingly, were not dilated, and the kidneys, though not removed, on palpation showed no abnormality. Instruments could be passed into the bladder after death with ease, but the length of the urethra was not noted. The bladder wall was greatly thickened and heavily trabeculated. There were two definite diverticula. A diagram was shown to illustrate the various relationships.

As to the aetiology of the impaction in this case Dr. Addis had no opinion. There was no history or sign of any inflammatory condition binding the bladder down and back, nor was there any pelvic deformity. The condition must have been present for a long time, and it was difficult to understand how urination had remained apparently normal until three weeks before the time of operation, during which time there was continuous overflow incontinence. He could recollect two instances of great distension with hypertrophy of the bladder wall in cases of impacted fibroids, but in these the anterior peritoneum was stripped up, and approach could only be made by a very high incision. He remembered also a case of advanced carcinoma of the urethra, where the bladder could be felt as a thick-walled cyst abdominally for some time after the obstructing growth had been removed and a cloaca formed. He could not recollect any case in which an ovarian cyst had caused the condition. He said that the French recognized a condition of *prostatisme sans prostate* in both male and female, which might cause changes similar to those occurring in this specimen, but he thought that a mechanical explanation was the more reasonable one in this case.

Mr. GOUGH asked if there was any possibility of a nervous lesion, and he recalled a case of distended bladder in a patient who suffered from transverse myelitis. Mr. ST. GEORGE WILSON wondered if the case could have been one of the so-called "modesty bladder," which was sometimes found in school teachers and shop assistants, who were compelled to hold the urine for long periods. Dr. ADDIS, in reply, stated that the patient exhibited no nervous lesion. He also thought that the long anterior cul-de-sac ruled out the possibility of "modesty bladder."

"THE DOCTOR AS DETECTIVE"

At the annual meeting of the Manchester Medical Society on May 6th Dr. L. A. PARRY read a paper on "The Doctor as Detective."

Dr. Parry began by stressing the value of medico-legal and scientific evidence in the detection of crime, especially major crime, such as murder. As an illustration he referred to the Fox case, in which a verdict of death from suffocation from smoke was returned at the inquest. As the result of suspicions aroused by some remarkable insurance transactions the body was exhumed. It was found that there were no sooty particles in the larynx and no carbon monoxide in the blood, which should have been present if the cause of death had been as stated at the inquest. But there was evidence of death from strangulation. The doctor, acting as a detective, had been the means of securing the conviction of a very brutal matricide. The growth of toxicology was then traced from its early days to the present time. Three cases were quoted as illustrations: the trials of Mary Blandy in 1752, of Dr. Smethurst in 1859, and of Crippen in 1910. In the first case, one of the earliest if not the first in which medical evidence was given in a poison trial, Dr. Addington testified that he had found arsenic in the powder which had caused the death of Mr. Blandy. No examination of the viscera was made. In the Smethurst case Dr. Swayne Taylor, the celebrated toxicologist, swore at the police court that he had found arsenic in a bottle from the house of the accused. Later he acknowledged the arsenic was contained in the copper gauze he had used for his test. In spite of this terrible blunder Smethurst was convicted, but afterwards pardoned as the result of a united outcry of the medical and legal professions in London. In the Crippen case Dr. Parry remarked on the enormous importance of the medical evidence, first, as regards a mark on the piece of flesh found buried in Crippen's cellar, and secondly, on the analysis of the viscera discovered there. The prosecution called evidence that the mark on the piece of flesh was a scar, and as the woman whom Crippen was charged with murdering had a scar in an identical position the significance of the mark became of vital importance. For the defence it was contended that the mark was not a scar, but simply a fold in the skin, and in support of this claim evidence was given that in microscopical sections a few hair follicles and sebaceous glands were seen. The prosecution rebutted this, and said that often a small fragment of epidermis was included in a scar, and this would account for the appearances noted. There was no doubt that the mark was a scar. As regards the analysis of the viscera, Dr. Willcox (now Sir William Willcox) had found a vegetable alkaloid which dilated the pupil. He could exclude cocaine, and that left only three other possibilities—atropine, hyoscyamine, and hyoscine. By differential tests he proved it to be hyoscine. Crippen had purchased five grains of this at a chemist's, and could not account for its use in any way. The defence claimed that Dr. Willcox had not proved he had found hyoscine. The substance might be a cadaveric alkaloid produced by decomposition. Dr. Willcox said he had employed Vitali's test, which differentiated between vegetable and cadaveric alkaloids, and this test was conclusive. A textbook by a doctor appearing for the defence was produced, in which he stated that he regarded Vitali's test as accurate. Why had he altered his opinion? He replied that he had looked further into the matter, and had in connexion with this case come to the conclusion that his first view was wrong. This statement took away any value which might be attached to his opinion. Crippen was found guilty, and was hanged.

India

The Countess of Dufferin's Fund

The Countess of Dufferin's Fund (National Association for Supplying Medical Aid by Women to the Women of India), which is well known to readers of these notes, has done well to publish *Fifty Years' Retrospect—1885-1935*, in which the main events of the history of the Fund are set out. The authors are Drs. Margaret Balfour and Agnes Scott, each of whom has been secretary of the Fund for a considerable number of years. A prominent note in the retrospect is the tribute paid to the way in which Indian women have from the first, and later in increasing numbers, come forward with courage and determination to train themselves for a form of service to which there was considerable opposition. On the administrative side provincial branches of the association sprang quickly into being, independent for financial and executive purposes, but loyal to the objectives of the Fund, and contributing a small proportion of their own receipts towards its maintenance and expansion. The United Kingdom Committee, founded in 1888, provided passages to India and outfits for women medical practitioners, as well as scholarships in the London School of Medicine for those who agreed to work in India subsequently. Thirty years later the Lady Hardinge Medical College for Women in India came into being. The wives of successive Viceroys played their parts in different extensions of the Fund. Hospitals were gradually opened throughout the Provinces, though most of them went through financial crises. Some won popularity quickly; others suffered from doubt and suspicion owing to an occasional inevitable death, especially when a very necessary operation had been performed. An Association of Medical Women was founded in India in 1907 to raise the standards of treatment in hospitals and elsewhere, since they were for various reasons admittedly low in some places. Until 1911 the Government of India had given no help, except that it had provided one clerk and office requisites. An appeal to the Government, however, resulted in the promise of an annual subsidy of about

£10,000 to the Central Committee for the carrying on of a service of medical women, to be lent to the provincial committees for the staffing of the affiliated local hospitals. This subsidy was gradually increased, and it is now hoped that the number of medical officers supported by it (forty-four) may be increased as the result of donations from the Jubilee Fund of India. The Dufferin Fund has now become the head of an important all-India service, which links together women of different Provinces in carrying medical aid into the poorest and remotest parts of the country. It has been the pioneer in training native midwives, health visitors, and the organization of local health authorities, and it is now actively considering how the still urgent needs may be more effectively met by the new knowledge gained from scientific research.

The Punjab Epidemiological Bureau

In his report on the public health administration of the Punjab for the year 1934 Dr. K. A. Rahman includes an instructive account of the work of the Punjab Epidemiological Bureau. Malarial surveys were organized in four widely separated areas, and the most appropriate anti-larval measures in each case were determined and brought into operation. The data required for the preparation of the Provincial malaria forecast were collected from various sources, checked, and analysed ; as usual, the annual preliminary and the final malaria forecasts were issued in August and September respectively, and a subsequent study of the incidence of malaria and of the forecast (based on the epidemic figures and the spleen rate in November) proved that the forecast was almost exactly accurate. No widespread or severe epidemic of malaria was recorded in any part of the province. The spleen census in June dealt with 83,833 school-going children under the age of 10, and that in November with 92,006, the number of schools visited in each case being respectively 766 and 824. The task of suppressing an outbreak of cerebro-spinal fever in the gaols of Lahore continued until the end of 1934, and a controlled experiment was started for ascertaining the immunizing value of the anti-meningococcus prophylactic vaccine prepared at the Central Research Institute, Kasauli. The anti-hookworm campaign in Shakargarh, which began in 1933, was continued until the end of July, 1934, individual treatment being given at first to patients with hookworm ova in the faeces, and mass treatment of the population being adopted later. The number of specimens examined in the laboratory of the Bureau in the course of its routine work was 21,716. It is still located in the King Edward Medical College, and requires more room, particularly for the work of the hookworm and cerebro-spinal fever investigations.

Rangoon Health Week

The Royal Sanitary Institute announces the result of the competition for the "Bostock Hill Memorial" Shield, 1935. This trophy is offered annually for the best celebration of Health Week in the Empire outside the British Isles as a memorial to the late Professor A. Bostock Hill, for many years chairman of the Empire Health Week Committee of the Royal Sanitary Institute. The shield has been awarded for the Health Week and Exhibition held in Rangoon in 1935, which was organized by the Burma branch of the Indian Red Cross Society. Among the other entrants the adjudicators considered that the celebration of Empire Health Week in Lagos, Nigeria, was deserving of the highest commendation. They also commended the celebrations in Pretoria and Port-of-Spain.

Scotland

Lord High Commissioner at Edinburgh Hospitals

According to the annual custom, Lord Kinnaird, the Lord High Commissioner in the present year to the General Assembly of the Church of Scotland, and Lady Kinnaird paid a round of visits to Edinburgh hospitals. On May 20th they visited the Royal Infirmary, and Lady Kinnaird laid the foundation stone of the new home for nurses, to be called the Florence Nightingale Nurses' Home. Lady Kinnaird also visited on that day the Central Training Home of the Queen's Institute of District Nursing in Edinburgh. In a speech of welcome she was informed that there were at present 920 Queen's nurses throughout Scotland, and that during the past year the nurses in the training home who undertook district work in Edinburgh had paid 196,963 visits. The statistics of their maternity work in Scotland has been remarkable, and during the year 1934, out of 967 cases attended by them in Glasgow, there was no death, while in Edinburgh, out of 1,116 cases, there were only two deaths. On May 21st Lady Kinnaird was received at the Royal Maternity and Simpson Memorial Hospital by Dr. Nasmyth, chairman of the board of directors, who informed her that 2,366 children had been born in the hospital during the past year, while 904 outside cases had been attended by the staff, making a total of 3,270 cases. The following day Lord and Lady Kinnaird were present at the annual meeting of the Edinburgh Foot Clinic, when Sir David Wallace, in speaking of the year's work, said that nearly 20,000 patients had been treated at the clinic. The students had to do a minimum of 750 hours' work in two years before being admitted to membership of the Incorporated Society of Chiropodists.

New Principal of Glasgow University

The King has appointed Sir Hector James Wright Hetherington, M.A., LL.D., at present vice-chancellor of Liverpool University, to succeed Sir Robert Rait, whose retirement from the post of principal of Glasgow University was announced in these columns last week, and whose death occurred on Monday, May 25th. Sir Hector Hetherington, who is 48, had a distinguished career as a student at Glasgow University, gaining numerous medals and scholarships, including the Ferguson Scholarship in Philosophy. In 1910 he became assistant to the professor of moral philosophy at Glasgow ; four years later he was appointed lecturer in the department of philosophy in Sheffield University, and in 1915 professor of philosophy in the University College, Cardiff. During the war he acted as a temporary officer in the Intelligence Division of the Ministry of Labour, and at the close of the war was retained by the Ministry for work in connexion with the drafting of Part 13 of the Treaty of Versailles, later proceeding to Washington as one of the British assistant secretaries of the first International Labour Conference. From 1920 to 1924 he was principal and professor of philosophy in the University College, Exeter, and from 1924 to 1927 professor of moral philosophy in Glasgow. He took up his present appointment in the University of Liverpool in 1927. Sir Hector Hetherington has been a member of various Government bodies, including the Royal Commission on Unemployment Insurance, and in 1935 acted as chairman of the Board of Inquiry into the wages agreement in cotton manufacture.

Dr. R. D. Clarkson of Larbert Institution

The great work that has been done by Dr. R. D. Clarkson as medical superintendent during forty-one years' service at the Royal Scottish National Institution, Larbert, was recognized in a complimentary dinner to him in Edinburgh on May 22nd. The toast of "Dr. Clarkson" was proposed by the Earl of Mar and Kellie, who said that his long period of office had been a record of strenuous and most successful work. In 1894, when he was appointed medical officer, there were 242 children in the institution, and the annual income was £9,130. To-day there were 730 children, a staff of 170, and the income was £67,000. In 1911 inmates were removed from the institution at the age of 18, and in his report for 1912 Dr. Clarkson had forecast the establishment near the institution of a colony where men and women who were mental defectives might remain and be saved from the perils of ordinary life. This colony had only recently

been completed. Dr. Clarkson, in reply, said that when he went to the institution in 1894 the number of persons interested in mental deficiency had been very small. At the present time a large number of people had come to look upon the mental defective as an economic worry, and some of them were rushing in with ideas of sterilization and the lethal chamber as the only possible solution of the problem. He hoped, however, that they could continue to act upon the faith in which the institution had been founded, that such children could be trained to be responsible to a certain extent for their actions, and in this faith the institution would flourish.

Glasgow's Care for Mental Health

The delegates attending the conference of the Royal Medico-Pyschological Association of Great Britain and Ireland were entertained to luncheon in the City Chambers, Glasgow, on May 13th. This association now has a membership of 950, including practically all the medical men and women in the United Kingdom who are associated with the treatment of the insane. Dr. R. D. Clarkson of Larbert, speaking at the luncheon, said that Glasgow Corporation had always taken a foremost place in regard to the mental health of the community, and long before the Mental Deficiency Act was passed the city was caring for its mental defectives in a way that was a model to all other communities. The new colony at Lennox Castle (which is being completed at a cost of £1,000,000 and will provide accommodation for 1,280 beds) was the Corporation's latest and greatest effort in this direction.

England and Wales

Joint Tuberculosis Council

The Joint Tuberculosis Council, on which the representatives of the British Medical Association are Drs. C. O. Hawthorne and F. W. Goodbody, has issued a report of its proceedings during the two calendar years 1934 and 1935. It published in November, 1935, through the British Legion Press, the fourth report of the Employment Committee on Care and After-care Schemes in this country and abroad. Among the conclusions it was regretted that not more than 25 per cent. of the staffs at tuberculosis institutions generally was provided by ex-patients. The field of educational therapy had not yet been fully explored. Village settlements were described as the ideal form of after-care, and various practical suggestions were made for their greater efficiency. Tuberculin testing and treatment has continued to be closely watched by the Council, and a pamphlet by Dr. W. H. Tytler on tuberculin allergy has been circulated. Other subjects considered include tuberculosis institutions, artificial pneumothorax, prevention of the common cold, and the milk supply. Medical post-graduate courses have been arranged at home and abroad, and special committees are at work on certain lines of study and research. A memorandum on the examination of contacts has been recently issued. The usual procedure of contact examination is described, and the chief difficulties which occur in practice are enumerated. Certain medical reasons for failure in this respect are considered, and recommendations are made for improving the usual procedure, especially as regards the type of examination and the selection of cases. It is remarked that contact examination should be regarded as providing an opportunity for clinical research on the factors predisposing to tuberculosis. Another memorandum, also issued this year, relates to the microscopical demonstration of tubercle bacilli in the sputum. Attention is drawn to the most recent modifications, and full details are given. The Pottenger method (gasoline concentration test) is commended.

Blood Transfusion Service

It is perhaps characteristically English that the Blood Transfusion Service in this country is carried on as a purely voluntary organization. In the *Journal* of March 14th tribute was paid to the work of the Blood Transfusion Service now so ably managed by the British Red Cross Society. The recent issue of their quarterly contains a modest record of the amount of work done during the past twelve months. When the Red Cross Society took over the service in 1925 the number of requests for blood transfusions was 428; in 1935 a new record has been reached, 4,701 transfusions having been given, so that in ten years the work has multiplied elevenfold. Two factors must tend to make even heavier demands on this service. First, there is the increasing popularity of the continuous drip method of intravenous administration as applied to blood transfusion by Drs. Marriott and Kekwick of the Middlesex Hospital, whereby eight or ten pints of blood may be administered to a patient over a period of two or three days. Secondly, there is the demand for adult serum, and for the even more valuable convalescent serum for the treatment of measles. Of the transfusions given in the course of last year, by far the greatest number were for the treatment of aplastic and pernicious and other anaemias, and for carcinomata, notably of the stomach and rectum, though an increasing number of blood transfusions have been given for post-operative and post-partum haemorrhage and shock and for conditions of general septicaemia. The British Red Cross Society has long done yeoman service in this country. Its ten-year-old foster-child, the Blood Transfusion Service, is maintaining the traditions of the society, and the thanks of the profession are due to both.

The Mental Deficiency Services

Sir Kingsley Wood, Minister of Health, on May 20th opened the new Middlesex Colony, Shenley, which has been established for the care of mental defectives in the county. The patients are accommodated in separate "homes" of the villa type, each of which takes from thirty to sixty patients. Those who are capable of being employed are provided with suitable occupations on the land or in the workshops of the colony, and children are also to be engaged at a variety of simple occupations. Sir Kingsley Wood said there was no branch of our public health service in which such striking changes had been effected in recent years, with regard both to national outlook and to methods of treatment, as the mental deficiency services. Much was being done to-day which had not only transformed the whole atmosphere of mental treatment but was giving better and happier conditions to those who were mentally afflicted. Charles Reade once suggested that the best hope for the insane was to be found in trying to treat them as sane. This could not be adopted successfully in all cases, but much was being done by providing happier conditions of living, and, particularly for the young and trainable, well-directed occupations, outdoor recreations, and other beneficent means which were designed to bring interest, control, and self-respect. There were approximately 300,000 mental defectives in England and Wales, of whom one-third required institutional care. The community owed a debt to those authorities who were taking the right steps to deal with this difficult problem.

A Medical Meeting at Bath

A meeting at Bath on May 16th of the History of Medicine Section of the Royal Society of Medicine was attended also by members of the International Congress of Physical Medicine. Visits were paid to the Pump Room, the treatment establishment, the Roman Baths, and the historic sites of the city. Sir D'Arcy Power unveiled a mural tablet at 12, South Parade to the memory of John Hunter, who stayed at this address in 1785, when his fame as a surgeon and a pioneer scientist was already established. At a dinner in the Guildhall in the evening the mayor welcomed the guests, and Dr. E. W. Goodall, president of the Historical Section, with Professor Louis de Pap of Budapest, who had been attending the Congress, replied. The dinner was followed by an address in the Pump Room by Dr. F. G. Thomson, on some early physicians of Bath and the times in which they lived. This lecture, which was illustrated by lantern slides, described the use of Bath waters through the ages,

and included various personal details about the physicians of earlier days, which interested and amused the audience. On the following afternoon visitors enjoyed a motor run in the neighbourhood of Bath, and were entertained afterwards to tea by the mayor and mayoress, Dr. and Mrs. J. S. Carpenter.

Prevention of Cancer

In its report for the year 1935 the Manchester Committee on Cancer states that a specification of mineral lubricating oils has been drawn up which, if adopted, should reduce to a minimum the risk of these oils causing cancer in mule spinners and other workers. Dr. C. C. Twort, director of the Cancer Research Laboratories, describes a new test which has been devised for assessing the carcinogenic and dermatitic properties of mineral oils and which has the advantage of taking only seven to ten days to complete. The test is performed by injecting a few drops of oil into an animal and subsequently recovering the oil for examination ; if the oil is toxic the animal will alter the physical characteristics, while the non-toxic oil will remain unaltered. Research is continuing on other issues arising out of a study of mule-spinners' cancer, notably on the variation of sensitivity among different individuals and of different parts of the skin in the same individual. Another line of investigation is that relating to the effect of atmospheric pollution by crude hydrocarbons, such as those emitted from the exhausts of motor vehicles and from domestic and factory chimneys.

CORRESPONDENCE

Criminal Responsibility: The M'Naghten Rules

SIR,—In the *Journal* of May 9th there is a report on the case of Rex *v.* Douglas Burton, with comments on the application of the M'Naghten rules.

Assuming the accuracy of the report, it would appear that, as has happened in other cases, the guidance given to the jury was not in the actual terms of the answer of the judges in the M'Naghten case, which have by usage acquired the force of law, but in a paraphase of these terms. The words of the answer are " that the accused was labouring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or, if he did know it, that he was doing what was wrong." These are translated into the phrase " that he did not know what he was doing." In a matter of such difficulty and gravity it is surprising that more attention has not been given to the exact wording of the rule, which presumably was framed with the greatest care and deliberation. The expression " did not know what he was doing " would sufficiently express the words " did not know the nature of the act," whereas the rule adds the words " and quality of the act," and no explanation is given of the meaning to be attached to them, though it is difficult to suppose that they were intended to have no value. If the words are carefully studied it would appear that " knowing the nature of an act " means recognizing the facts about the act, a function of intelligence, whereas " knowing the quality of an act " must mean something different ; for the quality of an act is apprehended by feeling and is recognized by its emotional appeal. If this be so the framers of the rules by their wording conveyed two distinct ideas, a fact which has not received due consideration. It is true that Mercier refers in a cursory way to the meaning of the word " quality," but makes the strange suggestion that the quality of the act is its nature in the eyes of the law, such as in the Hadfield case, high treason. It is difficult to accept this as a satisfactory meaning for the word " quality " ; moreover, this aspect of the matter is more appropriate to the subsequent part of the rule dealing with the wrongness of the act.

The custom has been to lay undue stress on the word " know," and to apply to it the narrower and specialized meaning of " understand " instead of the more general sense of " recognize " ; and this seems to have been the source of the restricted interpretation so commonly given to the rule.

If it is necessary to amplify or paraphrase the rule, as from usage appears to be the case, would it not be more accurate and enlightening to say to the jury that it was for them to decide whether or not it was proved that the prisoner was by disease of the mind prevented from normally apprehending the facts about the act—that is, of understanding what he was doing—and also prevented from having normal feeling about, or normal emotional response to, the act? Such an interpretation does not seem to go beyond the meaning of the words of the rule, but gives it a fuller and more accurate explanation. It does not appear that there would be more difficulty in applying the rule so read than in the more restricted sense, nor need it be more likely to open the door to abuse. The mental state of a man at the time of committing an act must in either case be determined by inference from his conduct before and after the act as well as at the time.

The law holds, and probably wisely, that some such simple tests as the M'Naghten rules must be put to the jury, and it would seem that even in their present form, if taken at their full value, they need not incur the reproach of so far falling behind modern scientific knowledge as to lead to unjust conclusions. Thus applied in the present case surely the verdict would have been " Not guilty by reason of insanity," instead of " Guilty but insane."—I am, etc.,

Teddington, May 19th. R. LANGDON-DOWN.

Individual Medical Defence

SIR,—Dr. Crosby's letter (May 23rd, p. 1077) about the extravagance of maintaining two separate organizations for performing on behalf of the profession one single function—individual medical defence—sets out very logically a case which has on several previous occasions, though not recently, been presented to those who manage the two societies concerned—the Medical Defence Union and the London and Counties Medical Protection Society. Dr. Crosby's letter is particularly timely, because one or two obstacles which formerly militated against a favourable reception of his idea no longer exist.

Before I set out, as briefly as I can, the pros and cons of what Dr. Crosby is suggesting—which is, I take it, an amalgamation of the Defence Union with the medical section of the Counties Society, leaving the dental members of the latter to continue it on behalf of the dental profession—let me make it quite clear that I am expressing a personal view alone, and am not committing one single colleague of the council of the M.D.U.

Let us take the advantages first. One medical secretary instead of two: the combined work would not be too much for an experienced and capable man. One clerical staff instead of two: probably about two-thirds of the existing staffs could do the combined work. One auditor instead of two. One office rent to pay instead of two. One bill for repairs, cleaning, decoration, etc., of offices, and caretaking. One advertisement account, and a greatly reduced one, for there would be no need for the existing competition to secure new members. Smaller expenses on travelling allowances, etc. Increased prestige following larger membership and larger funds: incidentally I assume that the reserve fund of the Counties Society

would be divided *pro rata*. Further, the combined reserves thus created would be so large that there would be no necessity to reinsure indemnity claims, as both societies at present do; thus the insurance premiums would be saved: almost the only point on which I differ from Dr. Crosby is over the adequacy of these reserve funds.

Now let me admit one or two difficulties. The first can be summed up in the phrase "vested interests." As regards the medical secretaries, I trust my friend Dr. Fegen will forgive me if I say that his very long and useful career in the profession will in the not so very distant future entitle him to a rest. As regards solicitors, the postulated Dental Defence Society will, of course, require the services of an experienced firm; and in any case each society selects its solicitors on a yearly basis. Clerical staff would, of course, be taken over by one or other of the new organizations. Another possible objection is that in the past the spirit of healthy competition between the two existing societies has been useful in promoting the adoption of progressive ideas. This is certainly true: the risk of stagnation must be guarded against by careful selection of the council, which, after all, is in the hands of the members at their annual meetings. Lastly, I have heard it argued that it is useful for a disgruntled member of one society to be able to resign, knowing that he can join the other one: I do not really attach any great importance to this, and in any case it is more than counterbalanced by the fact that as things stand a practitioner contemplating unethical conduct can (and has been known to) join both societies, secure in the knowledge that neither of them can then lay a complaint about his conduct before the General Medical Council.—I am, etc.,

South Kensington, May 25th. HENRY ROBINSON.

Milk: Safe and Unsafe

SIR,—May I be permitted to express the hope that your recent notes (May 16th and 23rd) on the milk supply will help to secure the perusal by many members of the profession of a small pamphlet entitled *The Nutritive Value of Milk*, and issued by the Ministry of Health and the Department of Health for Scotland; the document is free from official and other technical phrases, and can be obtained through any bookseller for the modest sum of threepence. The number and frequently varying terms applied by the authorities to the several forms of graded milks have produced widespread confusion, and probably the position will not be completely satisfactory until the recommendations of the Cattle Diseases Committee are made legislatively effective. In the meantime there is some gain in a brief and simple official statement which does at least tend to guide public opinion on the simple issue—milk, safe or unsafe—and which may therefore well be commended by medical practitioners to the attention of their patients.

The circulation of the pamphlet in question is all the more advisable as a selected quotation from it is being used to support an advertisement campaign undertaken by the Milk Marketing Board. In this advertisement may be read the announcement that according to the Government Committee

> "an increase in the average consumption of milk to about one pint per head per day would result in the improvement of the general health of the community."

It is quite true that the official pamphlet does contain this sentence. But it contains also the warning (not quoted in the advertisement)

> "It is an unfortunate fact that milk is a medium through which disease may be conveyed to man. . . . The ideal is milk from perfectly healthy cows, but herds in which all the cows are perfectly healthy are at present relatively few. Where such milk is not available the milk should be pasteurized or boiled before use."

Evidently the gentle art of advertisement includes the nice selection of appropriate quotations.

The immediate future of milk names and grades is ruled by a new Order, which prescribes (June 1st) three classes—namely, "tuberculin-tested," "pasteurized," and "accredited." The first is obtained from cows which have passed the tuberculin test; the second is made safe by effective heat treatment; while "accredited" claims neither of these guarantees, although the term suggests all the virtues. It is, indeed, merely Grade A under another name, and among its merits "safety" cannot be included. An instructive parallel is provided by the Ministry of Agriculture, which has tried to encourage the formation of "attested herds"—that is, herds guaranteed to be free from tuberculosis. In the feeding of these herds when milk is used it must either be supplied by tuberculin-tested cows or must be pasteurized; to "Grade A" and to "accredited" there is no admission. Surely the protective care which parents and the educational authorities extend to the children in their charge cannot be less than that which the Minister of Agriculture provides for his "attested" cattle. And there falls some measure of duty on the medical profession to educate public opinion to this level. A contribution to this end is the commendation of the Ministry's *The Nutritive Value of Milk*.—I am, etc.,

London, W.1, May 26th. C. O. HAWTHORNE.

*** An annotation, recording the action taken by the Public Health Committee of the British Medical Association, appears at page 1116 this week.—ED., *B.M.J.*

Histidine Treatment of Peptic Ulcer

SIR,—I do not think we can take as basis for judgement of a therapeutic method reports such as those of the American Council of Pharmacy, the object of which is not the complete study of a method but decision (liable to reversal by the same Council) as to the granting of an absolutely official sanction to that method. These reports are without doubt done with great care, but like all human endeavour, particularly the work of committees, is liable to error. They are actuated by a sceptical spirit which cannot be that of true therapeutics. They are based on literature, mostly American, but not on the personal work of the writers nor on consideration of the work done in other countries. Thus, regarding histidine treatment, I prefer to take as basis personal work done by reliable clinicians, and such work in favour of this method exists in abundance. Some observations may be conflicting, an example being those quoted by Dr. Hurst in his letter in the *Journal* of May 23rd (p. 1077). The fact that they are in conflict, however, does not impose upon us the necessity of always accepting the negative, although this is, of course, a very comfortable attitude. We must constantly try to perfect our therapeutic armamentarium.

Histidine treatment did not fall out of the blue, but is a development of work on proteinotherapy and pepsinotherapy. It has a definite and precise physiopathological basis, and satisfies the first principle of therapeutics, *non nocere*. It has given definite results in the hands of many gastro-enterologists. I have applied this method of treatment since its introduction two years ago. I have obtained definite and good clinical results, and do not hesitate to recommend it as a valuable addition to the medical treatment of ulcerous disease.

We accept no pontifical authority in medicine since Paracelsus burned the Canon of Avicenna at his inaugural lecture in Basle in the early sixteenth century.

This applies equally well to the reports of the American Council of Pharmacy, and to any other self-appointed high tribunal of therapeutics.—I am, etc.,

London, W.1, May 22nd. A. P. CAWADIAS.

Adhesions of Joints and Injury

SIR,—Mr. Watson Jones is to be congratulated on his lucid exposition of this subject in the *Journal* of May 9th. I would like to mention a few points which have impressed me in practice.

In many cases of stiff shoulder-joints there has been no clue as to the aetiology. While one is tempted to consider such cases as traumatic, it seems unreasonable to expect that an injury so trivial as to have escaped the patient's notice should cause such a stiff joint. Curiously enough, in these cases, manipulation has been very successful.

Manipulation of a stiff joint may give a poor result because some unsuspected septic focus has been overlooked. Such a joint is very painful after manipulation, and heat aggravates the pain ; some dental septic focus is often found in this type of case.

Should massage be used in the treatment of fractures after consolidation has occurred? My own opinion is that in children it is unnecessary and often harmful (especially in elbow injuries) ; in adults it may be used with advantage in selected cases, especially in nervous and elderly patients with poor musculature.—I am, etc.,

Hove, May 18th. J. M. TURNER, F.R.C.S.

Chronic Meningococcal Septicaemia

SIR,—In the *Journal* of May 9th (p. 931) there was an interesting report of three cases of meningococcal septicaemia by Dr. A. M. Stewart Wallace. No investigation of the sphenoidal sinus or other accessory nasal sinuses is noted in the two patients who recovered, and no report of the condition of these sinuses as found post mortem is recorded.

Westenhoeffer in 1905 described a sphenoidal sinus empyema in one-third of his twenty-nine necropsies on meningococcal cases, and I found this condition present in thirty-two out of thirty-four necropsies (*Journal*, 1920, i, 7). In Dr. Stewart Wallace's patients headache was a prominent early symptom in the two who recovered, suggesting the possibility of sinus involvement —the blood counts again in two out of the three cases suggest "localized pus." It seems possible that the primary reservoir of meningococcal infection from which the blood stream was invaded might have been a sphenoidal sinus empyema, though to be found in the cases which recovered it would have had to be looked for early, while the blood culture was positive. In the patient who died a careful post-mortem might have revealed the presence of a sphenoidal sinus empyema.—I am, etc.,

London, W.1, May 21st. DENNIS EMBLETON.

Alkali Treatment of B. coli Pyelitis

SIR,—The letter of Dr. Lawrence P. Garrod in your issue of April 4th (p. 720) raises the question of the rationale of Dr. Osman's treatment of *B. coli* pyelitis, in his paper in the *Journal* of March 21st, and points out the technical fact that "the optimum for growth [of *B. coli*] lies very near the *p*H of 7.6, which is the only figure given by Dr. Osman as being within the range at which the alkali treatment is aimed." Dr. Garrod says further: "That the treatment has good results I do not wish to dispute ; I would only suggest that a better explanation be found for them (is it not possible, for instance, that an alkaline medium favours the cellular defence mechanism?), or else that the treatment be frankly recognized as empirical." This emboldens me to put forward my version. For several years I have treated *B. coli* pyelitis and bacilluria with very large doses of alkalis over long periods, but I begin by judging of the state of resistance by the proportions of the differential white count, and watch progress by the changes in it under treatment during the quiescent periods and regulate the dosage accordingly. A raised lymphocyte percentage, with correspondingly lowered polymorphonuclear leucocytes, with few or no eosinophils, indicates an unsatisfactory immunity, and such a patient may either steadily respond to treatment without further attacks and regain and sustain a more balanced differential white count or may only do this after several attacks. I have often prepared a patient to expect them, and explained them as "auto-vaccinations." It frequently needs several months of alkalis to raise old neglected cases to this pitch of reaction, but afterwards the improved white count indicates a more secure level of well-being.

Surely *B. coli* infections, whether found in kidney, bladder, cervix, vagina, stomach, lungs, peritoneum, or blood, indicate: (1) growth at higher levels and in greater numbers in the bowel ; (2) insufficiency of the local tissue defence mechanism of the bowel ; (3) insufficiency of the blood and reticulo-endothelial system in their bactericidal work ; and (4) the overplus finds outlet through the kidneys, which suffer damage both from toxins and from bacilli. My theories about the alkali treatment are:

1. It raises and sustains the general level of the blood pressure by supplying the adrenals with the necessary sodium and thus overcoming the chronic hypo-adrenia which is so often the most disabling part of the syndrome.
2. It overcomes the chronic gastritis by removing mucus, improving the hypochlorhydria, and thus indirectly checks the free growth of *B. coli* in the stomach.
3. That alkalis are an important part of the biochemical basis of immunity, and thus a restored alkali reserve plays a large part in the recovery of the defence mechanism. I attribute the return of a balanced differential count to the action of the alkalis.
4. The parenchyma of liver and kidney benefits by the improved alkalinity of the blood in the work of detoxication and excretion of toxin and bacilli respectively.

Other parts of the treatment are directed towards reducing the abundance of the overgrowth of *B. coli* in the bowel by a "diet reform," in which coarse wheat and whole-wheat flour are substituted for rice, white flour, and other starches. Sugar is reduced to a minimum, milk is forbidden except as buttermilk or curd, and abundant vegetables and fruit, with moderate protein, are advocated. The local defence mechanism is stimulated by either ol. ricini, 2 drachms every night, or by sodium ricinoleate, 5 grains in capsules, for six to nine months or even longer. Besredka showed that sodium ricinoleate acts on the bowel organisms, so that a toxic body is converted into an antigen and auto-vaccination results. Thus the alkali treatment is a very important part in a triple attack on *B. coli* whenever they are found where they ought not to be, be it a pyelitis, a cervical erosion, a gastritis, or a septicaemia.

I owe a debt of gratitude to Dr. Osman, for it was in the application of his methods of treatment of nephritis by alkalis that other intriguing avenues in diagnosis and treatment opened up. One of the most important is this big question of the place of alkalis in the biochemical basis of immunity. They have a place ; but what, and how?—I am, etc.,

Medical School, Vellore, South India, May 6th. FLORA R. INNES.

Ultra-short Waves

SIR,—In his interesting address "Physical Medicine To-day," published in the *Journal* of May 16th, Sir Leonard Hill states, in reference to ultra-short waves, that "laboratory tests show them to have no other effect than that of heat." This statement is so opposed to the view held by many of those who have had the longest experience of this development of the high-frequency currents that it would be of great interest to electro-therapists in this country and abroad if Sir Leonard would kindly explain in more detail the nature of the laboratory tests to which he refers.—I am, etc.,

Oxford, May 19th. W. J. TURRELL.

Treatment of Varicose Diseases

SIR,—I have read with great interest the excellent article by Mr. R. T. Payne in the *Journal* of May 2nd (p. 877), and also the ensuing correspondence by Mr. Dickson Wright (May 9th, p. 959) and Dr. Raymond Greene (May 16th, p. 1019). In the light of my own experience of over 4,000 cases I should like to make a few observations.

1. *Aetiology.*—I agree entirely with Mr. Payne's sex distribution and age of onset. Sicard laid great stress on the endocrine aspect, and I do think that the exhibition of thyroid and ovarian extract has a place in after-care. I quite agree that varicose disease is progressive, and I have stressed this in my book, *The Cure of Haemorrhoids and Varicose Veins.* The destruction of an offending vein does not remove from the patient the tendency to the development of other varicosities, and the importance of after-care cannot be over-estimated, including avoidance of tight garters and of unnecessary hanging down of legs when sitting, alteration of the patient's habits, improvement of health and diet, administration of endocrine preparations, and the wearing in certain cases of elasto-crepe bandages, stockings, and supports.

2. *Solutions.*—I agree in the main that the quinine and urethane combination is the most reliable fluid. I have found, however, that it does give rise to more serious perivenitis than the others, and in nervous patients its temporary "flushing" and palpitation symptoms are distressing. I see no disadvantage in the occasional immediate thrombosis caused by morrhuate. I use the latter for smaller, more superficial veins, and its "froth" for skin venules. Its only disadvantage is the alarming allergic symptoms that it occasionally produces (see my own case, *British Medical Journal,* March 11th, 1933, p. 430, and April 15th, 1933). Lithium salicylate 35 per cent. with 1 per cent. ethocaine is another useful fluid which does not seem to allow veins to acquire tolerance for it, nor, like salicylate of soda, does it cause cramping pains. It has the disadvantage that even ten weeks after an injection clots get bigger in places some distance away from the site of injection, and in rare instances have ulcerated through. I feel that different solutions are indicated in different types of veins and of patients. The giving also of incompatibles from different syringes—a method introduced by Maingot—is a valuable "dodge" in those few cases that will not "take" with any one given fluid.

3. *Technique.*—I am a firm supporter of the empty vein technique. I have, moreover, found that in those cases of enormous varices, on which most others would operate, occlusion can be obtained with quite small clots by means of subsequent tight "burying" of the vein. The injection site is covered with collodion, and a large tight wad of wool (the shape of the vein) is pressed on to the vein, and then the flesh from each side folded over to "bury" the vein and kept for three or four days in position with a strip of elastoplast. I know that many believe in first injecting the lowermost varices—the reason being that if the uppermost veins above are first occluded, it then becomes more difficult to inject the lower. That is true; but it nevertheless does not, in my opinion, justify the practice. For if one first injects the lower varices bigger clots will result, with perhaps oedematous feet and thickened perivenitic lower calves. *Per contra,* if one injects the highest vein first it is equivalent to the old Trendelenburg operation; it often saves a good deal of injection lower down; and also there is less risk of perivenitis and oedema of the lower calf.

4. *Pregnancy.*—I note with pleasure Dr. Raymond Greene's letter. Sodium morrhuate or lithium salicylate can be used with advantage in the earlier months of pregnancy to secure the relief of the patient's distress.

5. *Thrombosis and Phlebitis.*—I am in entire agreement with Mr. Dickson Wright. A point that so far as I am aware has never yet been mentioned bears stressing—the value of reversed elastoplast. Many old, fat, dropsical, brawny legs need permanent supports—stronger in some cases than stockings will provide, and which can only be provided by elastoplast. These cases, however, tire of having the "sticky stuff" next to their skin for many weeks on end; and their skins in some cases show slight irritation after its prolonged usage. In such cases I apply elastoplast with the sticky side outermost. The bandage stays "put," and the support is as great. The stickiness can easily be wiped out in a minute or two by well rubbing it with cotton-wool. Indeed, when I use elasto-plast on sensitive skins I reverse it whenever possible.

6. *Prognosis.*—There is no real cure for varicose diseases. In my view the patient should be seen from time to time, suitable fresh varicosities injected, and the whole case supervised as to habits, life, bandage supports, endocrine preparations, diet, etc.—I am, etc.,

Liverpool, May 22nd. STUART MCAUSLAND.

Spirit Dressings: A Caution

SIR,—My council has asked me to report a case it recently considered which appears to contain a significant pointer to members of the profession engaged in general and surgical practice.

A patient sustained a slight injury as a result of the puncture of one of his fingers by a chicken bone. This was followed by cellulitis, which required frequent and regular dressing. These dressings produced, as they commonly do, a sodden condition of the tissues, which our member thought would be corrected by application of a spirit dressing. He accordingly applied a spirit dressing, and asked the patient to return within forty-eight hours for a further inspection of the infected part. The patient had no sooner left the surgery than he attempted to light a cigarette. The dressing is said to have "blown up," and he quickly returned, holding aloft a hand resembling a flaming torch. Our member dealt with the situation promptly and efficiently, and provided the necessary treatment.

It is to be noted incidentally that the settlement of this case involved the Medical Defence Union in the expenditure of a considerable sum. The moral to be drawn from the foregoing unfortunate experience is that patients who receive spirit dressings should be warned of the dangers of flame or fire of any kind, which is likely to ignite the dressing and thereby cause grievous damage.—I am, etc.,

ROBT. FORBES,
Secretary, Medical Defence Union.

49, Bedford Square, W.C.1.
May 25th.

Induction of Premature Labour

SIR,—It is interesting to note that at the discussion at the Royal Society of Medicine on induction for disproportion in primigravidae (*Journal*, May 23rd, p. 1070) no mention is made of the method of rupture of the membranes. It will be recalled that this was recently discussed by Dr. Higgins (October 19th, 1935, p. 721), whose series of cases showed no increase in the rate of sepsis, inertia, or infant mortality, which, as we read the discussion, were the main objections raised to induction. Dr. Higgins's simple technique had seemed to us as general practitioners a forward step in dealing with this difficult problem, and has certainly encouraged us to follow his example since then—so far successfully.

In view of these results and those of authorities quoted by Dr. Higgins we should be glad to know if opponents of surgical induction consider that their objections apply equally to this method as to the use of bougies, and if so, if they would be good enough to refer us to any work giving evidence to a contrary effect.—We are, etc.,

J. N. WATSON.
C. W. MARSHALL.

Exeter, May 23rd.

Treatment of Sleeplessness

SIR,—The number of drugs for the treatment of insomnia which are advertised points, I feel, to much misapprehension of the subject. No patient should be treated for chronic insomnia with drugs till the following alternatives have been tried and failed.

(1) The patient should be assured that there is no danger in mere sleeplessness. The "mind" can be rested with an hour or two of "cat-nap" taken anywhere and anyhow. In fact this is the main difficulty, for the mind, being refreshed, insists on the body being active; and (2) the body must have at least six hours' complete rest, *lying flat* and with the peripheral circulation opened up. Hence the first thing to try is (3) a hot-water bottle at the feet (not the abdomen, which will probably produce the opposite result), and (4) a visit to the W.C. about bed-time. If these do not succeed (5) let the patient lie flat on his back with as small a pillow as may be so arranged that neither is the chin pressed against the sternum nor is the mouth dragged open, and hands by the side. Let him relax his fingers—thinking of nothing else. When they are relaxed his toes will probably be tense. When the toes are relaxed the fingers will be tight again. When after a few minutes, hours, or days they are both relaxed the jaws will be found clenched or the tongue pressed on the palate, and eyelids tight, etc. When all these have been loosened and the tenseness tracked wherever it shows—for example, diaphragm or further—if sleep has not come long before, a condition will be reached which is a very pleasant substitute for sleep.

If all these fail the question of drugs must be considered, but not before.—I am, etc.,

L. WALLACE, M.B.Oxon.

Kew, May 20th.

Analysis of Asthma

SIR,—Dr. H. S. Russell, in his interesting letter (*Journal*, May 23rd, p. 1078), mentions two points of considerable importance in the aetiology of asthma. First, the congestion of the respiratory mucous membrane due to the action of infra-red rays, as described by Sir Leonard Hill, is of interest, for the importance of the effect of circulatory changes in the respiratory tract and elsewhere is frequently overlooked as a cause of bronchial asthma. Turgescence of the respiratory mucous membranes, whether due to posture or chilling of the extremities (to mention two common examples), often produces an attack of asthma.

Dr. Russell's second point refers to the effect of coughing. I agree that a paroxysm of coughing will frequently initiate an attack of asthma, but in my experience the site of origin of the paroxysmal cough is usually not in the nose, but in the throat, and in most cases is situated on either the right or left lateral pharyngeal band. This type of paroxysmal cough will often follow the eating of some hard dry substance such as a biscuit, or the acts of laughing or inhaling tobacco smoke, and sometimes it occurs merely on lying down. Fortunately this type of cough can usually be permanently relieved by very lightly touching the appropriate place on the pharyngeal band with a ball-pointed galvano-cautery point.—I am, etc.,

CLEMENT FRANCIS, M.B.

London, W.1, May 24th.

"Cure" for Sciatica

SIR,—There are few cases of sciatic pain that do not yield to treatment by manipulation, and my experience is in agreement with Dr. Gerald Slot's claims that sciatica can be cured quickly and inexpensively by this treatment. In cases where an anaesthetic is used usually a single treatment is sufficient, and a cure may be "effected overnight." Where an anaesthetic is deemed inadvisable or unnecessary, as well as in many cases of chronic sciatic pain, it is my custom to give three or four manipulations at intervals of three days, preceding each treatment by placing the patient in a radiant heat bath for some twenty minutes beforehand. This I have found of considerable help, for the patient is made drowsy thereby, and a greater relaxation is obtainable.

As Dr. Dorothy Wood says (*Journal*, May 23rd, p. 1079), routine manipulation is likely to produce serious lesions, and it is indeed dangerous to treat every case of sciatic pain by extension of the spine and flexion of the legs and thighs with the pelvis fixed. The technique for the relief of sciatic pain is capable of wide variation, and a preconceived idea of the type of manipulation that one is to do, before careful examination of the patient, cannot be condemned too strongly. In acute cases of sciatic pain I have found it advisable to carry out treatment as early as possible, for then the tissues retain their elasticity, and forcible manipulation may be carried out. In chronic conditions, on the other hand, where muscle wasting is apparent and the tissues are devitalized by immobility, one must proceed with the utmost caution.—I am, etc.,

GUY BEAUCHAMP.

London, W.1, May 23rd.

Aetiology of "Tulip Fingers"

SIR,—Owing to the rapid strides being made in tulip culture this condition is causing increasing suffering among workers. In a note published last year[1] I advanced three theories of causation; curiously enough all three play their part.

(*a*) *Mechanical.*—This view was somewhat discounted, but it has now been shown that between the outer covering, the testa, and the bulb are numerous fine hair-like processes, readily seen when the bulb is held up to the light. These barbs, particularly those near the base, are rigid enough to penetrate the finger-tips, especially beneath the nail. This can be demonstrated by means of a magnifying glass. They are not present in the daffodil, hyacinth, crocus, or snowdrop.

(*b*) *Acid Reaction.*—It was noted previously that the bulbs had a *p*H of 4.2, but this acidity, due to phosphoric and a trace of oxalic acids, is in no way responsible for

[1] Bertwistle, A. P.: *British Medical Journal*, 1935, ii, 255.

symptoms, since pulped bulbs and even concentrated extracts of fresh bulbs were innocuous when placed in finger-stalls worn on the fingers. The acid responsible is acetic and its development is interesting. Tulip bulbs contain a large amount of sugar, chiefly maltose. The fingers become coated with this sugar, which ferments as the result of the action of organisms in the atmosphere, as was shown by Pasteur. Now acetic acid alone produces merely a tingling of the finger-tips, but mixed with maltose all the symptoms of "tulip fingers" develop. A small amount of acetamide is also produced, but this has no effect on the fingers.

(*c*) *Bacterial.*—This view was favoured by the beneficent response to strong antiseptics, particularly biniodide spirit, although no bacteria had been identified. It is obvious, therefore, that antiseptics act by preventing fermentation of the maltose.

Treatment.—Rubber gloves would be ideal but for their clumsiness when stout and their perishability when thin. If the finger-tips are kept constantly brushed round with a suitable antiseptic, such as spirit of biniodide, or, better, dettol (10 per cent.), the condition would probably never develop or would prove tractable. While spirit of biniodide was the original substance used it has been found that dettol is less harsh and causes less smarting. Doubtless its mild alkalinity is a factor.

Leather and fabric gloves up to the present have been useless, since they become saturated with sugar, which ferments; but the suggestion forces itself on one that if such materials were soaked with antiseptic they might prove the solution to the whole problem.

My thanks are due to Dettol Laboratories for their painstaking work in connexion with the chemical analysis.—I am, etc.,

A. P. BERTWISTLE, F.R.C.S.Ed.

London, W.1, May 20th.

The Deaf and the Blind

SIR,—The letter from Mr. A. J. Story of the National Institute for the Deaf in the issue of the *British Medical Journal* for May 9th (p. 959) was of great interest to me as an almost totally deaf person. It is so very true and unbiased. Nobody would for a moment belittle the tragedy of blindness, but it is not the menace to mental health that deafness is. The brain of the blind person remains a normal brain, and his physical health excellent as a general rule, unless there is intercurrent disease, whereas the brain of a deaf person is not a normal brain, owing to the dangerously unnatural conditions to which it is subjected and the constant strain under which the individual lives. The infinite superiority of the congenitally blind over the congenitally deaf no one who has seen both will deny. In children who are deprived of sight or hearing after the age when speech has been acquired, the blind rapidly assert their superiority over the deaf, and the same can be seen in adults. Functional and nervous disorders are few in the former, but distressingly common in the latter.

The helplessness of medical science where deafness is concerned is incontestable, and, as it is not of itself a menace to life, research into causes has suffered on financial grounds in comparison with other diseases. The complete lack of official understanding of deafness was painfully illustrated in the great war, when it was necessary for a few public-spirited individuals like the late Sir Frederick Milner to fight for the rights of deafened ex-Service men. There are certainly signs that the medical profession is becoming increasingly alive to the fact that the monster is hydra-headed and that there are few mental and physical disorders to which it does not prove an open door unless intelligently handled. This, of course, can only be done by the patient with any real chance of success, and, except for wise guidance if required, is outside the province of anyone but the individual concerned. Work is the anodyne in all cases if the mental health is to be maintained, and on it depends physical health. The need is as great even where there is no financial necessity for it, and this fact is apt to be lost sight of. The late Sir William Milligan told me one of his greatest problems was how to keep his patients working, and thus limit their trouble as far as possible. The difficulties, as your correspondent points out, are many, but it is almost the *one* chance of salvation. I have worked myself for twenty years and should not be alive now had I not done so. The careful study of the psychological conditions of the deaf and the blind should be of great profit, as comparison between them is bound to reveal much that would be of use. I may add I was not born deaf, had acute hearing up to 19, and used no "aids" to nearly 30.—I am, etc.,

Edinburgh, May 11th. VENETIA BARING.

Cardiac Resuscitation Again

SIR,—I would like to record a case of primary cardiac failure under ethyl chloride anaesthesia successfully resuscitated in a dental chair.

The patient, a girl aged 4½ years, was to have seven teeth extracted. A normal induction of anaesthesia was carried out —4 c.cm. of ethyl chloride on an open mask. Three teeth had been extracted when suddenly the child stopped breathing, and simultaneously the temporal pulse completely disappeared and the colour became slate-grey. The chair was at once dropped flat and the head lowered; artificial respiration was started, carbon dioxide being given at the same time. As this produced no response 1 c.cm. of coramine was injected into the right auricle through the third right intercostal space. Immediately a weak irregular pulse became perceptible at the temple, and this was shortly followed by a resumption of breathing as weak inspiratory gasps at about five-second intervals. The colour had now lost its grey tinge, and on the addition of oxygen to the carbon dioxide the colour became pink, the breathing regular and deep, and the pulse steady and full. Three minutes in all had elapsed from the first sign of collapse to the reappearance of the pulse. After another minute or two the child stirred and vomited some blood-stained mucus, and shortly after that woke up screaming lustily, and, to my ears, joyfully.

Apart from her inability to retain any food or drink in her stomach all that day and the next, she made an uneventful recovery.

Excepting her bad teeth this patient was in perfect health, but she was a blonde. In this connexion I have observed that the cases which react badly to nitrous oxide and air, being prostrated after the administration, are invariably of the blonde type. I would be interested to hear whether this phenomenon has been observed by other anaesthetists.—I am, etc.,

DONALD BLATCHLEY, M.B., Ch.B., D.A.

London, W.4, May 23rd.

Robert Bridges as Medical "Truant"

SIR,—I am glad Dr. Maurice Jacobs protested against Lord Moynihan's statement that there is little or nothing to enable the reader to discover that Robert Bridges was a member of the medical profession. Bridges said he was convinced that he would be a better poet if he learned and practised some profession which brought him into active contact with human life, and particularly with the investigations and achievements of natural science. His poetry expresses the philosophy of life he acquired from natural science in general and from medicine in particular. No one could have written *The Testament of Beauty* without a biological training, and, I should feel inclined to add, without medical knowledge.

He intended to retire from medicine at 40, but ill-health induced him to do so at 37. The late Sir Norman Moore, who knew him well, told me that any ambition Bridges had towards the staff at St. Bart's was curbed by his dislike of work in the post-mortem room, then the only avenue of approach to that position. But there was another obstacle. He published in the *St. Bartholomew's Hospital Reports* a scathing indictment of the casualty department as then organized—if it can be said to have been organized at all. This paper secured two things: one that improvements were gradually made ; the other that he was never given another appointment at the hospital. The powers that be do not appreciate irony, and youthful reformers still find it advisable to curb their tongue and pen.—I am, etc.,

London, W.1, May 20th. W. LANGDON-BROWN.

Research in Tropical Medicine

SIR,—The decision of the Medical Research Council to extend its activities to the problem of tropical medicine will be welcomed in South Africa. No advance on the orthodox quinine treatment for malaria has been forthcoming, though 54,000 cases were dealt with by the South African Medical Corps on their return from active service during the last war ; facilities for the scientific testing of new drugs are lacking, for the investigation of medicines except those for leprosy is outside the scope of the Institute for Medical Research.

Many proprietary drugs have been introduced for treating both malaria and bilharzia disease, and some of these have gained official support, but scientific evidence of the complete destruction of adult schistosomes by derivatives of antimony other than tartar emetic is unavailable, and one is forced to the conclusion that many cases which might have been cured by skilful treatment have proved to be incomplete cures through the use of some more easily applied remedies. The formation of a tropical Medical Research Council should render an authoritative opinion available on new remedies and render superfluous the claims at present broadcast, with samples, from oversea.

Attention might also be given to the supposed worth of native medicines and to those herbal remedies which are liable to pass out of knowledge unless investigated shortly. A list of seven hundred was once submitted to the Natal Museum, but many copies of the *Annals* in which it appeared were unfortunately destroyed by fire.—I am, etc.,

Durban, April 29th. F. G. CAWSTON.

Universities and Colleges

UNIVERSITY OF LONDON

At a meeting of the Senate held on May 20th, with the vice-chancellor, Mr. H. L. Eason, in the chair, Arthur Wormall, D.Sc., was appointed to the University Chair of Biochemistry tenable at St. Bartholomew's Hospital Medical College, and W. F. Harper, Ph.D., M.D., to the University Readership in Anatomy, tenable at the London Hospital Medical College, both appointments take effect on October 1st.

The Dunn exhibitions in anatomy and in physiology for 1936 were awarded to R. S. Murley, St. Bartholomew's Hospital, and E. Petrie, University College, respectively.

UNIVERSITY OF LEEDS

At the annual degrees ceremony, to be held on June 29th, the honorary degree of LL.D. will be conferred on Dr. Henry Drysdale Dakin, F.R.S., director of the Medical Research Laboratory, New York.

Dr. A. Hemingway has been elected professor of physiology, and Mr. L. R. Braithwaite, F.R.C.S., professor of clinical surgery, in the University.

Professor W. Gough, F.R.C.S., will retire from the chair of gynaecology at the end of the present academic year.

Obituary

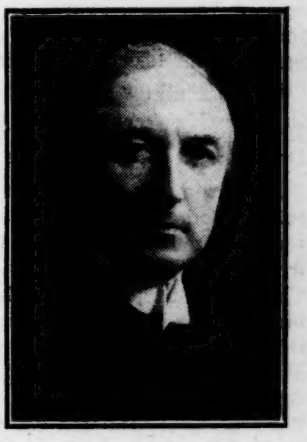
JOHN THOMAS HEWETSON, M.D., CH.M.

F.R.C.S., F.C.O.G.

Honorary Surgeon, Birmingham and Midland Hospital for Women

We regret to announce that the death occurred of John Thomas Hewetson at his residence, Metchley House, Edgbaston, on May 19th, following an attack of pneumonia. He had been actively engaged in his practice until ten days before his death.

John Thomas Hewetson was born at Hornsby Gate, Cumberland, on October 18th, 1872, and was the son of the late Pearson Hewetson of Fenton, Cumberland. He was educated at Grosvenor College, Carlisle, and received his medical training at Edinburgh University, Bristol General Hospital, King's College, and St. Bartholomew's Hospital. He obtained the English conjoint diplomas in 1896, and graduated with honours at the University of Edinburgh in the same year. In 1899 he obtained the F.R.C.S.Eng. and in 1901 proceeded M.D. of Edinburgh with honours. He subsequently held an appointment as house-physician at the General Hospital, Birmingham, and for a time was in general practice in Coventry. He was engaged in research work in 1900–1, and in 1904 he became a British Medical Association research scholar. In 1903 he was appointed assistant obstetric officer to Dr. Thomas Wilson at the General Hospital, Birmingham, and held this office for five years, during which time he was also gynaecological tutor. He also held appointments in the University of Birmingham as assistant to the chair of obstetrics and gynaecology, and gynaecological curator in the Pathological Museum.



In 1905 he obtained the degree of Ch.M. in the University of Birmingham, and in 1907 was appointed to the honorary staff of the Birmingham Maternity Hospital, which appointment he resigned only six months ago. In 1908 he relinquished his appointment at the General Hospital to join the honorary staff of the Birmingham and Midland Hospital for Women, and held that appointment up to the time of his death. From 1933 onwards he was chairman of the medical board of the Women's Hospital and senior surgeon to the hospital. When the British Medical Association visited Birmingham in 1911 Hewetson was honorary secretary of the Section of Obstetrics and Gynaecology.

During the period of the great war, in addition to his own work, he had charge of a large number of military patients in the War Hospital at Hollymoor. He held the office of consulting gynaecologist to the following hospitals: Lichfield, Halesowen, Rugby, Stourbridge, and Stratford. He was one of the original Fellows of the College of Obstetrics and Gynaecology, and for many years an examiner for the Central Midwives Board. During his earlier years as a consultant he made numerous contributions to the medical press on various subjects in his own specialty, but the rapid expansion of his practice compelled him to subordinate research work and writing to its demands. In the operating theatre Hewetson was brilliant, cool-headed, and resourceful. He constantly carried out at the hospital long and exhausting programmes of operations without showing any signs of

fatigue. The amount of work he was capable of doing was quite exceptional. This may be in part explained by his carefully planned daily routine and his punctuality; for in spite of the demands of an enormous practice he was never late for an appointment. Throughout his professional life he kept in constant touch with the advances of pathology, and was often to be found in the laboratory working on his own cases.

His charm of manner was irresistible, his kindliness and geniality endeared him alike to his patients and his colleagues. Although his work absorbed the greater part of his energies he had the instincts of a true sportsman, and he was never happier in his leisure moments than when attending a match between two of the great football or cricket teams. He married Bertha Woolley of Accrington in 1901, and leaves two sons and two daughters by this marriage. His wife died in 1916, and he subsequently married Helena Reynolds of Hartford, Cheshire, who survives him. By Hewetson's death Birmingham and a wide area in the Midland Counties have lost a great surgeon, and the staff of the Women's Hospital mourn the passing of a loyal and distinguished colleague. The memory of his devoted service will long remain an inspiring example to those who follow after.

HILDA N. LLOYD.

Dr. HAROLD THWAITE writes:

Hewetson was a great surgeon and a master of his art, cool-headed, able to exercise remarkable self-control, and was never ruffled in the operating theatre, where he treated everyone with courtesy, tact, and consideration. These qualities, allied to his personal charm, endeared him to all with whom he came in contact. His hospital work was always his first consideration, and he never allowed his remunerative practice to interfere with the very extensive work he did in an honorary capacity at the hospitals. He was beloved by all, particularly those best able to see and appreciate his great services to humanity. He was a great lover of sport—particularly football and cricket—and a practical supporter. He was a member of the committee of the Warwickshire County Cricket Club from 1922 to 1926, from which latter date he had been a vice-president of the club.

Dr. W. J. MCCARDIE writes:

It has been my great privilege to have known and worked with John Thomas Hewetson for more than thirty-five years, and I pay a heartfelt tribute to his memory. He was a straight man and a loyal friend; always cheery and courteous, he was loved by his patients. In his work as a surgeon he was outstanding: gentle, quick, never flurried, and had full confidence in himself. A tremendous worker, he never spared himself, even though hampered by periods of ill-health. He got the best out of everyone, and made full allowance for any shortcomings in others. He never spoke an unkind word. "One felt that one could never let him down," as a nurse expressed it. His patient always felt that she was the only one that mattered. He was not only a great surgeon but a great gentleman. For long he will be missed and mourned by all who loved him and worked with him.

Mr. LEONARD GAMGEE, F.R.C.S., writes:

It was my very good fortune to know Hewetson well from the early days, when he gave up his general practice in Coventry and was appointed assistant obstetrical and gynaecological officer to the Birmingham General Hospital. After holding that post for a few years he resigned on being appointed surgeon to the Birmingham and Midland Hospital for Women. I have always regretted his resignation, for it meant that he no longer took part in the teaching work of the Birmingham Medical School—a great loss to the school. It was at the Women's Hospital that Hewetson did his great work, which gained for him a reputation all over the Midland counties. One had only to know Hewetson well to appreciate his many good qualities. I think that his qualities as a gynaecological surgeon may be summed up in the two words safety and thoroughness. He never risked his patient's life in order that his operation might appear to be brilliant to his onlookers, and he never risked an imperfect result by fear of being thorough. He was not a man who thought that everything new in surgery was good because it was new, but at the same time he was constantly advancing in his methods. To see Hewetson operate was to get the impression that what he was doing was simplicity itself—a proof of good operating—for he was always calm and deliberate. He was not one of those men who, if anything goes wrong in an operation, blame their assistant, the anaesthetist, the nurses; in fact, blame everyone but themselves. No; he was always fair to those working with him. Hewetson was one of the kindest of men; he was always cheerful. Even when (as was often the case) his health was bad, he looked on the sunny side of life and had a happy word for everyone. We all feel that we have lost an outstanding man, who very worthily upheld the great traditions of the Birmingham school of gynaecology.

Dr. JOHN GEORGE CRAIK of Watford, Herts, died on May 23rd at the early age of 37. He studied medicine at the University of Glasgow, graduated M.B., Ch.B. in 1921, after serving as surgeon probationer, R.N., in 1918, and became house-physician and house-surgeon at the Glasgow Western Infirmary, and house-surgeon at the Glasgow Royal Maternity Hospital. "J. I. C." sends the following personal appreciation: If it be possible to speak of the life of one who from early manhood enjoyed the tender devotion of a loving and well-loved wife as a splendid failure the life of J. G. Craik was such a one. Born into a reasonably comfortable Scots middle-class home, Craik had charm, brains, a certain natural proficiency at games, and a talent for music. It is some men's lot throughout life to accumulate adventures; others accumulate degrees and honours, others artistic treasures, a few money. It was Craik's lot to accumulate diseases—and friends. The former came unsought and undeserved. I like to think the latter came equally unsought, but that they were as deserved as the former were undeserved. The list of the former would weary the reader, as in the end they wearied Craik, but he faced from early youth an apparently undiminishing adversity due to ill-health with a degree of courage such as few others could have shown. Craik's early promise—and it was considerable—faded away before the steady advance of pathological processes, but throughout it all he maintained and developed an objective attitude to his troubles. In his passing I have lost my oldest friend. We grew up as boys together, for a time were at the same school, went to Glasgow University together, served as house-physicians and house-surgeons together. After that our ways separated, but we kept in touch, and each regarded the other as his best friend. It seems but fitting, therefore, that his last letter to me should have come a bare hour or two before he died. In addition to his general practice in Watford—some years earlier when in Cardiff he had had to retire temporarily from practice on account of his health—Craik had managed to acquire some proficiency in the medical diseases of the eye. A member of the B.M.A. since qualifying, he had never found time, perhaps one should say energy, to interest himself actively in its policies. Only last summer he told me how much he regretted his lack of opportunities in this direction. His service to his profession was, however, a very real thing, and apart from his professional integrity, lay in this, that to the many doctors who knew him, the fortitude with which he, a doctor, faced the relentless pathological processes which assailed him was, and will ever remain, a source of wonder and inspiration.

We announce with regret the death, on April 14th, of Dr. JAMES SEPTIMUS ARMSTRONG, *M.C.*, medical officer in the service of the Tanganyika Government. He was born in 1891 in County Sligo, and before the war was studying arts at Trinity College, Dublin, with the intention of entering the Church ; but in 1915 he enlisted in the Royal Army Medical Corps, and in 1917 was granted a commission in the Royal Dublin Fusiliers and was awarded the Military Cross on the Western Front. In 1918 he returned to his studies and received the degree of B.A. He then took up the study of medicine, obtaining honours in anatomy and physiology, and graduated M.B., B.Ch. in 1924, holding an appointment as house-surgeon at the Adelaide Hospital in the same year. In 1925 he obtained the certificate of the London School of Hygiene and Tropical Medicine and joined the East African Medical Service. Since 1932 he had thrown all his energies into the co-ordination of sleeping-sickness preventive measures and anti-tsetse work in the Singida area, where his kindness, enthusiasm, and devotion to duty endeared him to all who knew him. Dr. Armstrong was taken suddenly ill on March 10th and was already convalescent when his condition became less satisfactory on April 7th, and arrangements were made to transfer him under medical care to Dar-es-Salaam. He collapsed suddenly in the train some two hours after leaving Singida and died soon afterwards. He was buried at Singida in the presence of residents comprising all nationalities. A firing party was provided by the Tanganyika police, and the Indian community showed the affection and respect which they felt by closing their shops on the day of the funeral. Deep sympathy is felt with Mrs. Armstrong and her two children, and the members of the Medical Department of Tanganyika have lost a loyal and devoted colleague.

We regret to announce the untimely death of Dr. JOHN GODFREY CORMACK of Boston, Lincolnshire. He died on May 10th, from pneumonia, at the age of 33. Born in Edinburgh, he received his early education at Fettes College, whence he entered the University, graduating M.B., Ch.B. in 1923. His first appointments included those of clinical assistant to the Hospital for Women, Soho Square, London, and medical officer to Hartlepools Hospital. He began general practice in Boston about ten years ago, and was elected to the surgical staff of Boston Hospital. He was also surgeon to the Boston Provident Dispensary and public vaccinator. Two months ago he was appointed medical officer to the Boston Schools and police surgeon, and he was on the staff of the Borstal Institution, North Sea Camp. Distinguished athletically since his school days, and a man of many interests and human sympathies, Dr. Cormack was widely popular, and great sympathy is felt for his widow. He was elected a member of the British Medical Association in 1925, and was frequently present at meetings of the Holland Division.

The following well-known foreign medical men have recently died: Dr. WILLIAM HOLLAND WILMER, for many years professor of ophthalmology at Johns Hopkins University School of Medicine, and one of the founders of the American College of Surgeons, aged 73 ; Dr. CHARLES JEFFERSON MILLER, professor of gynaecology, Tulane University of Louisiana School of Medicine, New Orleans, and a founder and past-president of the American College of Surgeons ; Dr. TILLAYE, professor of clinical surgery at the medical school of Tours ; Professor RUDOLPH MARESCH, head of the Vienna Institute for Morbid Anatomy, and formerly rector of the university, aged 68 ; Hofrat D. FELIX PAUSE, an eminent oto-rhino-laryngologist of Dresden, aged 75 ; Dr. KARL DIEM, a prominent balneologist of Vienna, aged 70 ; Dr. CHARLES LOUIS DANA, emeritus professor of clinical medicine (neurology), Cornell University Medical College, New York, and author of the *Textbook of Nervous Diseases and Psychiatry*, aged 83 ; and Dr. CHARLES LOUIS MIX of Chicago, editor-in-chief of the *Practical Medicine Series*, aged 65.

The Services

DEATHS IN THE SERVICES

His many friends in India and this country have heard with very great regret of the death of Lieut.-Colonel THOMAS ARTHUR HUGHES, M.A., M.D., Sc.D., F.R.C.P., of the Indian Medical Service. Colonel Hughes had been in poor health for the past few years, but he refused to give up his work until it became physically impossible for him to carry on any longer. Owing to a severe exacerbation of his lung trouble he was compelled to take leave about two months ago. He went at once to the Mundesley Sanatorium, but was already in so debilitated a state that he made no response to treatment. Hughes entered the I.M S. in July, 1910 ; he had already won high academic distinction, being first senior moderator with a large gold medal in natural science in the B.A. examination of Dublin University. He became M.D. in 1920, Sc.D. in 1923, and F.R.C.P.Lond. in 1934. In 1920 he was selected for the post of professor of physiology in the King Edward Medical College, Lahore, in 1924 he was appointed professor of clinical medicine at the College, and physician and medical superintendent of the Mayo Hospital. Shortly before he left India he was appointed to the post of principal and professor of medicine of the King Edward Medical College. Although Hughes had a very high reputation as a physician his leanings were chiefly towards medical research, and he made several valuable contributions to the *Indian Journal of Medical Research*, including articles on pulmonary tuberculosis in adult Punjabis, observations on cirrhosis of the liver in the Punjab, and on diseases of the heart. Major-General Sir JOHN MEGAW writes: Hughes was a man of very attractive personality and of high ideals. He neglected the opportunities of making money by private practice, but he never spared himself when it was a case of attending to his hospital patients, teaching his students, or carrying out a piece of research. His premature death was undoubtedly due to his high sense of duty. Great sympathy is felt for his wife, who was with him throughout his illness, and his children—a son aged 10 and a daughter aged 5 years.

Medico-Legal

ACTION BY A MENTAL HOSPITAL PHYSICIAN

Mr. Justice Macnaghten, sitting in the King's Bench Division, disposed last week of an action brought by Dr. H. C. McManus, formerly a medical officer at Park Prewett Mental Hospital, Hampshire, against Dr. R. S. V. Bowes, formerly medical superintendent of the hospital, the Visiting Committee, the Hampshire Joint Mental Hospital Visiting Committee, and their clerks.

Dr. McManus alleged that Dr. Bowes had slandered him or alternatively had wrongfully procured the committees to break their contract with him. Against the members of the committees he claimed a declaration that they were bound to pay him a superannuation allowance under the Asylum Officers' Superannuation Act, 1927, as from January 21st, 1923, and an order for payment ; a declaration that he was entitled to a return of his contributions ; damages for wrongful dismissal and breach of contract ; a declaration that a resolution to dismiss him passed on October 21st, 1927, was not passed *bona fide* but in abuse of statutory powers ; and damages for negligence and libel. From all the defendants he claimed damages for conspiracy.

The defendants denied all the allegations, and said that Dr. McManus was given proper notice terminating his engagement. The substance of Dr. McManus's case was that he had been appointed to Park Prewett in 1923 ; that the equipment and administration of the hospital were completely out of date ; that he tried to improve matters but attracted jealousy and resentment ; and that finally Dr. Bowes subjected him to all kinds of petty annoyance, accused him to others of improper conduct and the misuse of drugs, and finally induced the committee to dismiss him without a fair hearing.

After hearing all the evidence called by Dr. McManus, the learned judge held that there was no evidence against Dr. Bowes to go to the jury, and dismissed him from the suit with costs. His lordship also discharged the special jury which for three days had heard evidence on the alleged libel and slander, considering that the remaining claims for wrongful dismissal should be heard by a fresh jury, as the task of dismissing from mind all the former evidence was so

difficult that the original jury should not be asked to perform it. Dr. McManus withdrew all the charges he had made except those of wrongful dismissal. When, however, the fresh jury were empanelled Dr. McManus was too ill to attend the court and the jury were discharged. The learned judge gave judgement on the legal argument which he had heard. It was not disputed, he said, that the committee was entitled to dispense with the services of Dr. McManus. They paid him his salary up to the date of his dismissal and for three months afterwards. The question was, assuming that Dr. McManus was entitled to reasonable notice, whether three months was adequate in the circumstances, and that question was subject to the further one of whether he was entitled to any notice at all. Neither at the time of his engagement nor at any other time had any mention been made of notice. The defendants had argued that the Lunacy Act, 1890, s. 276, gave the committee power, at their pleasure and without assigning any reason, to revoke an appointment and remove a person from the office to which he was appointed. The learned judge thought that argument was well founded, and that it must be taken that Dr. McManus was employed on the terms that the committee might remove him at their pleasure.

Dealing with the claim for the return of contributions under the Superannuation Act, his lordship said that the Visiting Committee had made no charge of misconduct against Dr. McManus. He was entitled to receive the aggregate amount of his contributions, but only if he was not entitled to a superannuation allowance. Until that decision was given the defendants were bound to retain the contribution in the fund from which the allowance would be paid. Dr. McManus had applied to the Secretary of State for superannuation allowance and a decision had been given against it. The present claim for a declaration that he was entitled to superannuation had now been withdrawn. At the date of the writ in 1933, and when the jury were empanelled, Dr. McManus was not entitled to receive the deductions which the Joint Committee had made, for while the claim for superannuation was pending the defendants could not properly repay the contributions. Accordingly an order for the repayment could not be made. It seemed that the claim for superannuation had now been finally determined and could not be raised again. The whole action was dismissed with costs.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons will resume after the Whitsuntide Recess on June 9th.

The Air Navigation Bill and the Education Bill have been discussed this week in the House of Commons. The medical examination of children entering industry was debated on an amendment to the latter Bill.

Under the Mental Deficiency and Lunacy (Scotland) Act, 1913, the General Board's Regulations (1936) were laid on the Table of the House of Commons on May 26th.

A Joint Select Committee, of which Sir Francis Fremantle is a member, began on May 21st to consider the Public Health (Consolidation) Bill. Minor amendments were made.

In the House of Commons, on May 25th, the London County Council (Housing Site) Bill was down for second reading. A number of members, including Sir Francis Fremantle, had put down an amendment for the rejection of the Bill. When the Bill was called, objections were raised to its second reading, which was accordingly postponed. The second reading of the London County Council (Money) Bill was also postponed.

The vote for the salary of the Minister for Co-ordination of Defence was discussed by the House of Commons on May 21st. Sir Thomas Inskip said a committee had been set up to consider the supply of food in war time. All aspects of supply would come under consideration. The work of the Supply Board and its committees extended to medical stores, which engaged the attention of a sub-committee. A motion to reduce the vote was defeated by 270 to 115.

The Royal Assent was given on May 21st to the Voluntary Hospitals (Paying Patients) Act, the Royal National Pension Fund for Nurses Act, and the Bridport Joint Hospital District Act.

Midwives Bill

The Midwives Bill was further considered by a Standing Committee of the House of Commons on May 21st. It resumed discussion of an amendment moved by Mr. Edward Dunn to provide that the proposals submitted by an authority to the Minister should include the proposed basic salary, allowances, and other conditions of service of the midwives to be employed, such salary not to be less than that of health visitors employed by the same authority or working in the same area.

Sir KINGSLEY WOOD said that as the midwives would be the servants of the local authorities in the same way as health visitors were, Parliament must, if it was to maintain democratic government, allow the local authorities to fix the remuneration. Local authorities had fixed the salary of health visitors at a satisfactory figure, and there was every reason why they should do the same for midwives. The Government was giving them further financial assistance, and the great majority were keen to see proper midwifery services established. As for voluntary organizations, any arrangements concerning their work would have to be made by the local authorities, who would pass on the financial assistance given by the State, and by that means would be able to maintain the level of the remuneration which he desired to see. If a local authority did not fairly remunerate the midwives the Minister could withhold the Government grants. He had the power to do this under Clause 104 of the Bill.

Mr. MARKLEW said there was scarcely a member of a local authority present on that committee who had taken part in the selection of a medical officer of health who would not say that not only were proper scales of remuneration insisted upon by the organizations which protected the interests of medical practitioners, but the Ministry rightly emphasized the necessity for generous remuneration in such cases. Why should Parliament make a distinction between the lower-paid and the higher-paid servants in the local government service in this respect? Why should not the midwife have consideration similar to that which was given to the medical practitioner?

Mr. VIANT said chief medical officers and the medical fraternity as a whole were well able to look after themselves. If a local authority inserted an advertisement offering a salary that their organization considered to be inadequate they were instructed not to apply. Yet every local administrator knew that many voluntary organizations were paying inadequate salaries because they had not sufficient funds. Supporters of the amendment sought to ensure that these voluntary authorities did not act as a medium whereby too low a standard was set up.

Mr. DUNN'S amendment was defeated by 23 to 15.

Mr. SILVERMAN moved that the proposals submitted by an authority should include a statement of the arrangements to be made for the provision by the authority of sterilized maternity outfits in every case.

Sir KINGSLEY WOOD said the local authorities already had this power under the Act.

Mr. SILVERMAN said he was aware of this, but wished to ensure that the Minister had power in improving the arrangements of the local authorities to make certain that the power was exercised.

Mr. MARKLEW said the Minister himself knew that this provision was made on such a small scale that he had found it necessary on occasions to mention it in circulars to local authorities. Mrs. TATE said that apart from the difficulties of a midwife sterilizing the dressings in her own home, to sterilize adequately was very costly, and meant using a good deal of heating. Where home conditions were suitable it was often desirable that women should have their children in their own homes, and Parliament therefore should make sure that the conditions in the home were absolutely safe. Mr. EDWARD DUNN said the information which he had, particularly in connexion with one hospital, was that a number of deaths had taken place as the result of the use of unsterilized instruments. It was wrong to expect a midwife to provide her own instruments and to spend large sums out of her own pocket on sterilization.

The amendment was defeated by 23 to 16.

The Position of the Metropolitan Boroughs

Mr. KEELING moved to add as a further condition that the London County Council should not employ midwives in any metropolitan borough unless it could satisfy the Minister that it was impracticable to make efficient arrangements for the provision of midwives by the borough council either directly or through arrangements with a voluntary organization. He said the London boroughs were much larger than the non-county boroughs, whose claim had previously been debated, and on an average were larger than the provincial county boroughs, all of which would have their own midwives. Why should Wimbledon, with a population of 60,000, have its own midwives whereas the adjoining metropolitan borough of Wandsworth, with a population of 360,000, was to be handed over to the totally inexperienced London County Council? Many London boroughs went far beyond the requirements of the Bill in providing gynaecologists and bacteriological services, and in both 1934 and 1935 the maternal mortality in London was little more than half what it was in the provinces. The London County Council had no experience of domiciliary work: it dealt with the citizens of London only in hospitals and other institutions. The Joint Council on Midwifery, on whose report the Bill purported to be founded, said that the full benefits of co-ordination between all the parts of a maternity service could only be realized when the employment of the midwife was on the same basis as that of other members of the public service. The patient should be continuously in the care of the same service. The Joint Council must have seen that the logical result of its remarks was to allow the London borough councils to employ midwives. Sir Kingsley Wood had suggested on the second reading that there would be overlapping where a hospital was subsidized by more than one borough council, but Queen Charlotte's Hospital supplied midwives in two or three boroughs without difficulty arising. Sir Kingsley's other point was that 25 per cent. of the births in London took place in the County Council's hospitals, but another 33 per cent. took place in voluntary hospitals. The borough councils were in a position to make arrangements with both kinds of hospital, whereas the County Council would be prejudiced in favour of its own hospitals. The London County Council had no medical schools, and medical students who worked in hospitals subsidized by the borough councils should see as many confinements as possible. It was desirable that mothers should have a choice of midwives, but a London borough provided a wider choice than would be available in Barking or Wimbledon.

Sir KINGSLEY WOOD said a majority of the borough councils would like to have this work, but a minority had stated that they believed it in the interests of an efficient midwifery service that the London County Council should do the work. The majority of the borough councils would like the whole of the work entrusted to them, but Mr. Keeling's amendment applied only to the employment of midwives, and then with the reservation that the London County Council should retain the service if it satisfied the Minister that it was impracticable to make arrangements with a metropolitan borough council. He was afraid that the amendments would create difficulties of administration much worse than if the borough councils were entrusted with all the duties under the Bill. In London the supervising authority would be empowered to make arrangements with the borough councils who at present employed midwives, and if these councils were not satisfied they would be able to appeal to the Minister. The special problem of London arose from the number of voluntary hospitals which had extern midwifery services. There were twenty-two voluntary hospitals in London with such services. Two of these served parts of seven boroughs, while five others served parts of six boroughs. Under the amendment the London County Council would have to make all the arrangements with the voluntary hospitals as regards extern midwifery services, but then the appointment of the midwives would shift over to the borough councils. That would be an impossible position. A midwifery service in the hands of the London County Council would have behind it the finest facilities available.

The amendment was defeated by 32 to 5, and the committee adjourned until May 26th.

When discussion was resumed on May 26th Mr. RHYS DAVIES moved the omission of Subsection 5 of Clause 1, which gives to a welfare council or voluntary organization the right of appeal to the Minister of Health if the local supervising authority did not propose to make an agreement with either. The subsection further empowers the Minister to direct the authority to enter into an arrangement with the council or organization as he thinks fit, or to vary any arrangements proposed to be made. Mr. Rhys Davies said this subsection disclosed a bias towards the voluntary organizations, to whom the present unsatisfactory state of the midwifery service was due.

Mr. SHAKESPEARE said the only bias of the Minister of Health was in favour of an efficient service. The basis of the Bill was that because the county nursing associations up and down the country had shown splendid results as regards maternal mortality in sixty out of sixty-two counties, a similar service should be generally organized. The duty of organizing it was put upon the local supervising authority. Surely some account should be taken of the voluntary associations which were now conducting an efficient service. It would rarely happen that a local authority would try to squeeze out an existing service, but in that event the welfare council or nursing association should have a right of appeal.

The amendment was rejected by 24 to 9.

Mr. DUNCAN, at the instance of the Queen's Institute of District Nursing, moved that the welfare council or voluntary organization should have three months to appeal against a local authority instead of one month, as provided in the Bill. Mr. SHAKESPEARE said there was something in Mr. Duncan's suggestion. If the committee thought two months would be a fairer time than one month he would accept it. Mr. DUNCAN agreed to propose two months.

The committee accepted the amendment in this form.

The Best of Both Systems

On the motion that Clause 1 stand part of the Bill, Mr. RHYS DAVIES said the committee should not assume that the Labour Opposition was opposed to voluntaryism. Parliament had faced the same issue as to-day when the medical profession nearly organized a strike against the National Health Insurance Bill. Mr. Lloyd George then said that voluntaryism —not the medical profession—had failed. Of the thousands of medical men to-day none would wish to go back to the conditions before the National Health Insurance Bill. Similarly the day would come when the medical profession would recognize the greater value of a public midwifery service under local authorities as an instrument for reducing maternal mortality.

Sir FRANCIS FREMANTLE said medical officers of health knew there were strong and weak voluntary organizations and strong and weak local authorities. The time was not ripe for a complete municipal service to cover the whole country. The clause provided machinery whereby Parliament would for the present get the best out of both systems.

Mr. MARKLEW said he knew the increasing tendency of the medical profession to look askance at midwifery work and to avoid it if possible.

Sir FRANCIS FREMANTLE: In general practice?

Mr. MARKLEW: Yes.

Sir FRANCIS FREMANTLE said he could not allow that to pass. In rural districts, especially the general practitioner, to an extent which medical officers of health sometimes deplored, desired to retain midwifery work because that was the heart of a family practice. Mr. MARKLEW replied that that might be so in some country places, but in towns the tendency was to let this work go and concentrate on other types.

Mr. LUNN said it was a fact that there were only sixty-four municipal midwives in the country. Nothing whatever had been done in thirty years to reduce maternal mortality, so the Labour Opposition demanded a fresh start and an efficient service through the local authorities, with salaries satisfactory to the Ministry.

The clause as amended was approved by 25 to 10.

On Clause 2—" Appointment and terms of employment of midwives by authorities "—Mr. FRANKEL moved drafting amendments about the date of notification. He said this was to meet difficulties in London, where forms were sent out to midwives in December.

Mr. SHAKESPEARE said if this Bill became law in July the six preliminary months would elapse in January. During the following six months the local authority would advertise its

intentions in the Press, and also notify all midwives who had given intimation in the previous year—1936—of their intention to practise. The London County Council took cognizance of midwives' notices in January, though the notices were sent in during December. These midwives would therefore be covered. He could not accept a further amendment by Captain Elliston to cover midwives who had given notice to practise in 1935.

Mr. Frankel's and Captain Elliston's amendments were thereupon withdrawn.

Mr. LEACH moved to provide that midwives employed by an authority under the Act should be entitled to expenses on a scale laid down by the authority. Mr. SHAKESPEARE said every local authority provided travelling expenses for all its servants. The midwives would naturally participate. The Ministry would bear this question of expenses in mind when issuing a circular to the authorities.

The amendment was withdrawn.

Mr. RHYS DAVIES moved to provide that the midwife might appeal to the Minister of Health against the decision of the local authority to add periods up to ten years in calculating the services of a midwife for pension. Mr. SHAKESPEARE said this was a discretionary clause. Appeals were never allowed against a discretion.

Clauses 2 and 3 were then added to the Bill.

On Clause 4—"Financial provisions"—drafting amendments were made on the motion of Mr. SHAKESPEARE, who explained that by control of the block grant the Minister could deal with local authorities that failed to deal justly with midwives who were old or infirm. Mr. FRANKEL said the grants to local authorities would be fixed on expenditure during the "third grant period" of the block grant, but that during the fourth grant period, when the service was expanding, that provision would be inadequate, and many authorities would be forced to go slow.

Mr. SHAKESPEARE said Mr. Frankel was unreasonably apprehensive. The local authorities had pointed out they needed a number of years to find out what the service would cost, so the Government had agreed that from April, 1937, to March, 1942, the grant should be an annual one proportionate to expenditure. Within that period it should be possible to get an efficient service established.

The chairman of the committee ruled that amendments put down by Mr. Frankel could not be moved, as they might increase the charge of the taxpayer.

Clause 4 was added to the Bill, and the committee adjourned till June 11th. Mr. Shakespeare thanked the committee for the progress made.

The Government and Research

Mr. RAMSAY MACDONALD, replying to Mr. Chorlton on May 25th, said that the sum provided for industrial, agricultural, and medical research in the Estimates now before Parliament for the current financial year was £1,252,989, compared with £1,138,708 for 1935, an increase of approximately 10 per cent. He was unable to forecast the amounts to be included in the Estimates for future years, but the requirements in the various branches of research would be considered from time to time as heretofore by the Advisory Council for Scientific and Industrial Research, the Medical Research Council, or the Agricultural Research Council, as the case might be, and financial provision made after consideration of their recommendations.

Mr. CHORLTON, while thanking the right hon. gentleman for his answer, asked if it was definite that there was to be no provision made for five years ahead, no five-year plan. Mr. MACDONALD said he thought Mr. Chorlton knew enough of Parliamentary practice to know that that was impossible.

Mr. J. J. DAVIDSON asked if the Minister was satisfied with the sums confined to medical research. No reply was given to this question.

Mr. MACDONALD also informed Mr. Chorlton, on May 25th, that the Government scheme for co-operative research by means of research associations was already widely known throughout the industrial community, and repeated allusions to its operations and development were to be found in the daily and technical Press. In view of these facts he did not think that any additional canvassing of industry with the offer of assistance by grants on certain conditions, as Mr. Chorlton had suggested, would serve any useful purpose, but the Department of Scientific and Industrial Research was ready at all times to discuss with responsible leaders of industry any schemes for co-operative research in which the Department might share, and took every opportunity which arose of initiating such discussion.

Investigations into Vaccine Therapy and the Common Cold

Mr. DUFF COOPER, replying on May 26th to Mr. Lees-Jones, said that investigations had been undertaken on behalf of the War Office in vaccine therapy and in prevention by extensive hygienic precautions, without satisfactory evidence being obtained, as to the efficacy of vaccines in either influenza or the common cold. An inquiry now being conducted in collaboration with the Medical Research Council, however, gave hope of more promising results.

Shortage of Officers in R.A.M.C.

Mr. DUFF COOPER, replying to a question on May 26th, said that the deficiency in the authorized establishment of the Royal Army Medical Corps was sixty officers and 309 other ranks. With regard to officers, the shortage, which was being temporarily met by the employment of thirty-eight temporary commissioned officers and a number of civilian medical practitioners, was a considerable improvement on the deficiency of ninety-seven which existed when the present conditions of service came into operation two years ago, and he had every reason to hope that it would be made good at no distant date. The reason for the shortage must, of course, be a matter of opinion, but in the case of other ranks it was accentuated by a recent increase of 169 in the establishment. The position in regard to the shortage was gradually improving.

Bleaching Powder in Gas Attacks.—Mr. GEOFFREY LLOYD informed Mr. W. Roberts on May 21st that estimates were being prepared of possible requirements of bleaching powder for decontamination purposes in the event of a mustard-gas attack upon the civil population. The Government hoped shortly to examine with manufacturers how the necessary stocks could be accumulated and maintained.

Scottish Practitioners Attending British Post-Graduate School.—Sir GODFREY COLLINS told Mr. Henderson Stewart on May 22nd that the number of Scottish general practitioners who had attended the refresher course at the British Post-Graduate School, Hammersmith, was not known to him. Refresher courses were available in Edinburgh and Glasgow, and normally Scottish medical practitioners attended one or other. The Department of Health for Scotland made a limited number of grants annually to insurance practitioners in the Highlands and Islands and in rural and semi-rural areas of the Lowlands for the purpose of assisting them to take a course of post-graduate study. There was, however, no intention to extend this assistance to all insurance practitioners in Scotland. In past years two grants had been given to doctors who attended the London course. This year two prospective beneficiaries proposed to take this course.

Notes in Brief

On May 26th Sir Godfrey Collins, replying to Mr. Mathers, said he hoped that it would be possible during the present session to secure the passage into law of a Scottish Bill dealing with maternal mortality.

The additional cost of increasing contributory pensions to persons between 65 and 70 and pensions to widows from 10s. to 20s. a week would be about £41,000,000 a year at present. The additional cost of the same increase in the pensions to persons over 70 would be about £44,000,000 a year at present. Each of these figures would increase steadily in the future.

Medical News

The House of the British Medical Association, including the Library, will be closed for the Whitsun holiday from 6 p.m. on Friday, May 29th, to 9 a.m. on Tuesday, June 2nd (Library 10 a.m.).

King Edward VIII, following the example of his royal predecessors from William IV onwards, has given his Patronage to the Royal Society of Medicine.

The King has granted his Patronage to the Royal Society of Tropical Medicine and Hygiene. King George was Patron for many years, and, as Prince of Wales, King Edward had been Vice-Patron since he opened Manson House, Portland Place, the society's headquarters, in 1932.

A meeting of the Cheshire medical profession will be held on Wednesday, June 17th, at 3.15 p.m., at Eaton Hall, by permission of the Duke of Westminster. The object of the meeting is to focus attention on the report of the maternal mortality subcommittee appointed last September by the Local Medical and Panel Committee to review the maternal deaths of the last three years. The data have been provided by the county medical officer of health, who, with his deputy, is a member of the subcommittee. Those who intend to take part in the meeting at Eaton Hall should inform Dr. Lionel Picton, Holmes Chapel, Cheshire, by June 12th.

An intensive short course, intended for those with some knowledge of elementary principles, will be held at the Institute of Medical Psychology, Malet Place, W.C., from Monday, June 15th, to Saturday, June 27th. The lectures are open to registered medical practitioners only, and the fee for the course is £2 2s. Tickets must be obtained in advance from the educational secretary at the Institute.

A four-days course of instruction in the elements of tropical hygiene, from Tuesday, June 9th, to Friday, June 12th, will be given at the Liverpool School of Tropical Medicine for laymen who are proceeding to the Tropics. There will be two full sessions each day, and the fee for the course is two guineas. Applications should be addressed to the Laboratory Secretary, School of Tropical Medicine, Pembroke Place, Liverpool, 3.

The Institute of Child Psychology has arranged a course of eight lectures on the development of character in a changing society to be given at Friends House, Euston Road, N.W., on Wednesdays, June 3rd, 10th, 17th, and 24th, at 6.15 p.m. and 8.15 p.m. Particulars of fees and tickets may be obtained from the lecture secretary, 26, Warwick Avenue, W.9.

The eighth international course organized by M. Tomarkin, to include the study of medicine and archaeology in Greece under the auspices of the University of Athens and the Greek Ministry of Health, will be held in Athens from September 7th to 21st. There will be discussions on cardiovascular affections, surgery, tropical medicine, dermatology, syphilography, endocrinology, and cancer. Various excursions are being arranged to places of interest in Greece. Inquiries should be addressed to M. L. W. Tomarkin, Faculté de Médecine, Boulevard de Waterloo 115, Brussels.

The Fellowship of Medicine announces the following courses: gynaecology, at Chelsea Hospital for Women, June 8th to 20th; general medicine, at Prince of Wales's General Hospital, June 6th and 7th; obstetrics, at City of London Maternity Hospital, June 13th and 14th; fevers, at Park Hospital, June 20th and 21st; and general surgery, at Prince of Wales's General Hospital, June 27th and 28th. Special courses for M.R.C.P. candidates have been arranged as follows: neurology and psychopathology, at West End Hospital for Nervous Diseases, June 8th to July 4th; clinical and pathological course, at National Temperance Hospital, Tuesdays and Thursdays, at 8 p.m., June 9th to 25th; chest diseases, at Brompton Hospital, twice weekly, at 5 p.m., June 15th to July 11th.

A notice appears in our advertisement columns this week inviting applications for the Wandsworth Scholarship, for research in tropical medicine, offered by the London School of Hygiene and Tropical Medicine. The scholar must devote his whole time to his researches, but it is not essential that he should hold a medical qualification. The scholarship is tenable for two years at a stipend of £350 per annum. Applications should be addressed to the secretary of the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., and should be accompanied by a short statement of the candidate's qualifications and previous experience, and of the objects of the research to which he proposes to devote himself.

The Ligue Internationale contre le Rhumatisme will hold its fifth international congress in Sweden, at Lund and Stockholm, from September 3rd to 8th. Dr. S. Ingvar, professor of internal medicine in the University of Lund, has been elected chairman, and Professor G. Kahlmeter of Stockholm, secretary. Further information may be had from the secretary of the Ligue Internationale contre le Rhumatisme, Dr. J. van Breemen, Keizersgracht 489/491, Amsterdam, or from Professor Kahlmeter, Birger Jarlsgatan 36, Stockholm.

The sixth Panukrainian Congress of Surgery will be held at Odessa from June 24th to 29th. Further information can be obtained from Professor N. I. Kefer, Rue Bebel 58, Odessa.

An international congress of medical motorists will be held in Paris from June 14th to 16th. Further information can be obtained from the Association des Médecins automobilistes de France, Boulevard Margenta 89, Paris.

The annual malaria control course for laymen (engineers, planters, etc.) will be held at the London School of Hygiene and Tropical Medicine (Keppel Street, W.C.1), beginning Monday, June 22nd, at 10 a.m. It will be under Sir Malcolm Watson, director of the Ross Institute of Tropical Hygiene, and will last five days. Application to attend should be sent in as early as possible to the organizing secretary at the above address.

The thirty-seventh annual meeting of the Lebanon Hospital for Mental Diseases, near Beirut, was held at Friends House, Euston Road, on May 18th, under the chairmanship of Sir Hubert Bond, senior commissioner of the Board of Control, who presented the annual report of the medical director, Dr. Stewart Miller. There had been a "record" number of 556 patients under treatment during the year. Owing to much poverty and unemployment in Syria many of the patients admitted during the last two years were suffering from tuberculosis and malnutrition in addition to their other troubles, which accounted for a higher death rate than usual. Dr. E. W. G. Masterman, chairman of the General Committee, pressed for continued expansion to meet the urgent needs of the country. The new report will be sent, when ready, on application to the secretary, Lebanon Hospital Committee, Drayton House, Gordon Street, W.C.1.

The Ministry of Health has issued a Circular (1544) to local authorities in England and Wales urging the undesirability of using ortho-dichlorbenzene, in a diluted or undiluted form, for the disinfestation of houses harbouring bed-bugs. Although admittedly efficacious in this respect, this drug gives off fumes which have been shown to be toxic to animals in low concentrations, and may possibly have similar effects on human beings. It is difficult to take adequate precautions against these fumes, and the time necessary for proper ventilation is stated to be so long as to render this method of disinfestation impracticable for use in occupied premises.

The Crown Agents for the Colonies (4, Millbank, London, S.W.1) have published their usual annual return showing the vital statistics of European officials in East Africa for 1934. Copies (price 6d.) may be obtained on application to the address given.

The issue of the *Gazette des Hôpitaux* of May 13th contains a full list of the consulting and resident staff of the Paris hospitals.

Dr. T. P. Rees has been appointed president of the Croydon District of the League of Mercy.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, five lines).

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QUERIES AND ANSWERS

Pock Marks

"R. L. M." writes: I recently contracted chicken-pox from a patient. I had a severe attack, which left a number of pocks, especially about the face; several of them suppurated, leaving disfiguring pock marks. I should be grateful for any suggestions as to treatment.

Treatment of Enuresis

Dr. G. A. FERRABY (Worthing) writes in reply to "K. M. C." (May 16th, p. 1032): These children are usually encouraged to micturate frequently in the day time, and the bladder, never fully distended by day, will not tolerate full distension at night, or the infantile habit of frequent micturition has never been checked and the bladder has not undergone its normal development. With older children, short of hypnotic suggestion, it is usually enough to teach them to go to sleep at night in the expectation of waking when the impulse to micturate occurs. Belladonna, sufficient to dilate the pupils and make the initiation of micturition a matter of slight effort instead of great urgency, is almost always effective in enabling the bladder dilatation to be borne. It should be continued for six weeks, the dose being larger in the last three weeks.

Dr. EVELYN F. BEBBINGTON (Northampton) writes: In reply to "K. M. C." I might cite the case of a boy whom I have never seen who was cured by suggestion. In this case it was the mother who was over-fearful of failure, and who thus aggravated the condition in the boy. I had a long talk with her, and pointed out that she must suggest to the boy convincingly in speech and by her attitude that he would be cured and that he was certain of success in time. The result after a few months was so far successful that the mother now says he is completely cured except that after a sea bathe in the summer he might suffer from enuresis the same night.

Dr. ESSIE S. DUNN (Burnley) writes: In an intractable case—a boy aged 8 years—I tried all the routine methods of treatment unsuccessfully. Five weeks ago I suggested that after the bedtime hot bath a cold water douche over the lumbar region should be tried. As before, the boy is picked up to pass water one hour after going to bed and again one and a half hours later. This has produced a gratifying measure of success, enuresis occurring on only three occasions since this treatment was begun. I feel, therefore, that it might be worth a trial.

Bald Patch on Child's Scalp

Dr. C. C. MORGAN (Chester) writes in reply to the inquiry by "M.R.C.S." (May 23rd, p. 1089): I would advise him to try "pomade max," made by Messrs. May, Roberts and Co., Clerkenwell Road, London, E.C. I think if he carefully follows out the instructions he should get the desired result, but it will mean several weeks' perseverance.

Income Tax

"DEDUCTIONS" entered into partnership in January, 1935, with A and B, and paid £200 for drugs, dressings, instruments, etc. Of this £200 £150 was passed on to A and £50 to B. Can C treat the £200 as a deduction for assessment?

*** No. It represents a capital payment by him for his share of the stock of drugs, dressings, instruments, etc.; when he leaves the partnership presumably that or some similar sum will be paid back to him. A partnership is regarded for income tax purposes as a distinct entity, and payments by one partner to another do not affect the amount of the partnership profits. Money sunk in the purchase of a share in a practice is capital outlay.

Dependent Relative Allowance

"M. W." has a widowed mother and a delicate aunt as dependent relatives. Is there any legal means by which a greater allowance than £50 can be obtained for the burden of these two dependants?

*** Only by entering into a deed, which must be for a period of at least seven years, under which "M. W." is legally bound to pay a certain annual amount to the dependants or their trustees. If that is done income tax at standard rate can be deducted by "M. W." from the periodical payments, and the tax can be reclaimed by the two dependants. "M. W." would lose the existing allowance of £50, and probably some unearned income relief. Legal advice should be obtained in drawing up the deed to ensure that the grant of income fulfils the conditions laid down in Section 20 of the Finance Act, 1922.

LETTERS, NOTES, ETC.

A Psychological Film

It is not often that a popular film dealing with a medical subject can be taken seriously by the profession. An exception is the film, produced in Switzerland and now being shown in London at the Academy Cinema, entitled *Die Ewige Maske* (The Eternal Mask). While open to criticism in certain medical details, it is a serious attempt to present to the layman the arguments for and against the use of psychotherapy in certain cases of emotional crisis. The general atmosphere of hospital life has been well caught, and the film is something of a technical achievement, especially in its portrayal of the subconscious mind. The dream state is symbolized by globules of light filtering across the vision of the patient, thus differentiating quite clearly to the spectator the scenes of reality and those which are occurring in the subconscious only. It is interesting to see how far the screen can be employed in this direction and how much can be conveyed visually by subtle camera work. It opens up a field for further experiment. The directors announce it in the programme as "a striking study in psycho-analysis," but it has nothing to do with psycho-analysis properly so-called.

A Veteran Cyder Maker

The death has occurred at Attleborough, in his ninety-fifth year, of Mr. William Gaymer, chairman and joint managing director of Wm. Gaymer and Son, Ltd., cyder makers. In the course of eighty years in business he had seen the development of his firm from a small local industry to one with a world-wide distribution. One of his oldest friends was the late Sir Dyce Duckworth, physician to St. Bartholomew's.

Medical Golf

The spring meeting of the Sussex Medical and Dental Golfing Society will be held on the links of the West Sussex Golf Club, Pulborough, on Sunday, June 14th. Those interested who have not received notices should communicate with the honorary secretary, 16, The Drive, Hove, 3.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 48, 49, 50, 51, 52, 53, 54, 55, and 59 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 56 and 57.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 299.